

COMPUTERWORLD

New decade,
new identity
for Lotus

Workgroup successes
force tough choices

BY ROSEMARY HAMILTON
CW STAFF

CAMBRIDGE, Mass. — As Lotus Development Corp. moves into its second decade, it leaves behind the image of a one-product company that dogged it for years.

But the recent success with its Notes workgroup platform and its communications software has created a more difficult challenge. Lotus now faces an increasingly complex customer base of traditional and newer corporate users.

Several customers contacted recently said that while Lotus is making progress in meeting these diverse requirements, it has not yet mastered this balancing act.

"I think they've got some good people who are responsible for the vision going forward," said Robert Hecht, vice president of information systems at Prudential Investment Corp. But "sometimes they don't listen enough and ask enough questions."

Continued on page 16



Lotus' Monks: 'We essentially have two business models'

Novell shift to lift NetWare 3.11

BY JIM NASH
CW STAFF

PROVO, Utah — Novell, Inc. has decided to extend the life of its NetWare Version 3.0 network operating system indefinitely, an about-face that should please users who were resisting the upgrade to Novell's upcoming high-end networking system.

Novell's NetWare 3.11, the most current edition, seemed destined to hit a dead end once the feature-laden Version 3.2 was introduced later this year. But under a new plan, Novell will call the next version NetWare 4.0 and will continue to enhance the 3.0 product line, said Bob Young, marketing director

at Novell's NetWare Systems Group.

"Our customers were saying NetWare 3.11 cannot go away," Young said. "What we lost sight

of is that there are a heck of a lot of customers out there who don't need all the bells and whistles of [4.0]."

One local company is Kevins L. Erwin Consulting Engineers, Inc. The Fort Myers, Fla., ecology consulting firm is just now in the process of moving from NetWare 2.15 to from 3.11, primarily for its higher speed and Microsoft Corp. Windows support, according to Bill Lasson, a systems analyst at the company. A decision from Novell to keep 3.11 going "would be very welcome,"

Continued on page 14

PC giants consider office link

Borland, WordPerfect eye applications suite

BY CAROL HILDEBRAND
AND MARK HALPERIN
CW STAFF

WordPerfect Corp. and Borland International, Inc. are discussing plans to create a suite of applications to tangle with rivals Microsoft Corp. and Lotus Development Corp., according to sources close to the companies.

Discussions reportedly involve plans to co-market a group of Microsoft Windows-based applications that would compete with similar offerings, such as Lotus' SmartSuite and Microsoft's Office package.

Sources said it is likely that WordPerfect for Windows and Office, the company's electronic packages, will pair with Borland's forthcoming Windows version of Quattro Pro and Paradox. It is unclear whether a graphic package will be involved. Pricing is expected to be competitive with the rivals' \$795 price tag, sources said.

Maintain the word
Both companies acknowledged they are in discussions but declined to comment more specifically. Sources said an announcement could come as soon as June 16, when WordPerfect will hold a press conference to discuss

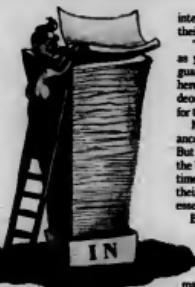
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IN DEPTH

Layoffs leading to IS overload

First Interstate Bancorp slashes information systems staff by 68%. The city of Boston cuts its IS group from 125 to 95. Baxter International trim its IS team 20% to 610. Fleet/Norstar Financial Group eliminates 1,300 IS staff members and is in the process of laying off another 1,500. And the list of layoff casualties goes on and on.

These numbers tell the tale of a profession that has recently been battered by layoffs, and experts say there is no relief in sight — especially for hard-hit industries such as banking and defense. Low morale, stress and



intense work loads have taken their toll on remaining staffers.

"I'm frazzled and nervous as you can get.... I have no guarantee that I'm going to be here tomorrow," says John Radecos, a systems administrator for the city of Boston.

Maintenance, quality assurance and projects are suffering. But layoffs can also bring out the best in an IS staff, with one-time specialists broadening their skills and pitching in to get essential work completed.

Beginning on page 75, Computerworld takes a revealing inside look at these four organizations now dealing with the aftermath of layoffs.

Shrink-wrapped Unix to take on Windows

BY MARTY FRAN JOHNSON
CW STAFF

SUMMIT, N.J. — Two weeks away from the debut of its low-end desktop Unix operating system, Unix System Laboratories, Inc. is changing its Destiny. The

product's name, that is — not what the future may hold.

USL's so-called Destiny operating system, set for introduction June 16, will be officially called Unix System V Release 4.2. Pricing is expected to fall in the \$500 range.

When the system hits the market on Intel Corp. personal computers in September, USL hopes to do serious battle with Microsoft Corp.'s DOS/Windows and its upcoming Windows New Technology environment. A lesser but still significant desktop competitor is IBM's OS/2, analysts said.

USL will position the 32-bit multitasking System V Release 4.2 as the Unix alternative to Windows NT or OS/2 for users who are "upgrading" from DOS or downgrading from mainframes and minicomputers into distributed client/server computing.

This scalable, modular version of Unix System V will run Unix applications in native mode and DOS applications in emulation mode. Analysts familiar with the product said it performs well in DOS emulation.

"This is shrink-wrapped Unix, and I think it's going to do

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INSIDE

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At Firestone, multiuser DOS is where the rubber meets the road. Page 6.

Apple's Newton comes to fruition. Page 13.

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Quotable

"I can stay fat and happy with 3.11 for two, maybe three years. We can wait for 4.0 capabilities."

BILL LAUZON
KEVIN L. ERWIN
CONSULTING BIOLOGIST

In reference to Novell's decision to extend NetWare 3.11's life. See story page 1.

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The 5th Wave



"I'm afraid I don't understand all the reports of our upgrade having a delayed release date. Unless... wait a minute - How many people here DIDN'T know I was speaking in dog months?"

EXECUTIVE BRIEFING

■ Novell will change direction on the next version of NetWare, renaming it Version 4.0 and giving new life to the 3.11 family. The decision should position NetWare 3.11 as a standard for workgroup networking, while moving 4.0 into the high end. Novell also offers two other low-end product families. Page 1.

■ Automated help desks offer quick, effective responses to user problems while helping IS managers track problems and plan for the future. But do help desks need expert systems to get such results? Many are satisfied with just the basics — call-logging and tracking systems — and are satisfied with the price as well. Page 65.

■ You can put an Apple in your pocket, but not a Macintosh. Apple's new handheld executive organizer, called Newton, marks a bold new direction for the company. The sub-\$1,000 machine can automatically add an appointment to a calendar, dial a phone or send a fax. Available: early 1993. Page 13.

■ Bridgestone/Firestone is dismantling its troubled Uniqa plan, opting to deploy a multizone DOS solution at its 1,600 service centers nationwide. Page 6.

■ Borland and WordPerfect are reportedly teaming up to offer a suite of Windows-based office applications that would include WordPerfect, Quattro Pro and Paradox. The combo could be a potent competitor to Lotus' SmartSuite and Microsoft's Office. Page 1. Borland will release Paradox 4.0 with promises of much greater speed. But it's not the much-anticipated Windows version. Page 55.

■ Layoff survivors say cuts leave projects unfinished, spirit low and work loads heavy. Survivors at the city of Boston, Baxter International and First Interstate Bancorp say the economic anguish — and some opportunism. Page 75. IS professionals who put the company first often reap career benefits for going the extra mile. Page 53.

■ Few banks are outsourcing these days, and there's a reason: Newly savvy in-house bank IT shops are giving outside competitors a run for their money. Page 12. Sources say EDS and McDonnell Douglas are hammering out a 5-year, \$150-million outsourcing deal. Page 12.



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Novell to boost WAN performance via NLM

BY JOANIE M. WEIKLER
CW STAFF

PROVO, Utah — Novell, Inc. confirmed last week that another NetWare Loadable Module (NLM) for accelerating the performance of its NetWare network operating system is now in customer sites.

An NLM dubbed Service Advertisement Protocol (SAP) Restrictor is under customer evaluation to let network administrators determine how often NetWare servers broadcast routing

table information across their networks. It would reduce the frequency of communication among servers routing Novell's IPX transport protocol from every minute to whatever frequency users decide.

Currently, Novell's routing software automatically broadcasts routing table updates from server to server once a minute, explained Neville Pereira, supervisor of the integrated computing environment at the Ontario Hydro Research Division in Toronto, where the NLM is cur-

rently being tested.

"Do users really need 1-minute updating?" he asked. "How often the update broadcast occurs should really be decided by the network administrator."

The electric utility is standardizing on NetWare 3 releases corporate-wide and is just starting to analyze how shifting its router broadcast levels would affect network performance.

"As we link remote sites onto our corporate network, this should help us restrict some of the negative implications of

IPX," Pereira said.

IPX has historically been notorious for network bottleneck problems, although Novell has made strides since the launch of its enterprise-oriented NetWare Version 3.11 last year to streamline IPX.

For example, its BurstMode Protocol NLM allows NetWare 3 to burst up to 64K bits/sec. packets of data and then retransmit them across the network rather than requiring a server acknowledgment after the transmission of each packet.

Glen Fand, president of the Greater Boston Area Novell Users Group, said the BurstMode NLM will probably have more of an impact on user networks than SAP Restrictor because BurstMode will affect all NetWare nodes, not just servers. However, he tagged SAP Restrictor as another example of Novell beefing up performance "and making NetWare a more viable option for the wide area."

But Fand, who is a principal research specialist at a large Northeast defense electronics firm, said his firm will likely leverage the SAP Restrictor as part of an overall effort to alleviate IPX bottlenecks.

Apple/IBM team shifts to Mac-AS/400 links

BY KIM S. NASH
AND JIM NASH
CW STAFF

RESEARCH TRIANGLE PARK, N.C. — An IBM executive involved in the firm's alliance with Apple Computer, Inc., confirmed last week that the two companies have reworked priorities in their 11-month-old partnership. Now, networking products — not reduced instruction set computing (RISC) machines — are expected to be the first fruits to drop.



Michael Fury, IBM's manager for the Enterprise Networking Group under the firms' joint development agreement, told *Computerworld* that pleases "a significant number of large" IBM Application System/400 and Apple Macintosh users forced the vendors to "prioritize our objectives," which were originally outlined in July 1991.

At the time, the spinoffs parts of the new partnership were the anticipated advanced version of IBM's AIX Unix operating system fronted by a Macintosh user interface and jointly built desktop machines based on IBM's RISC chip, called Power PC [CW, July 8, 1991].

In response to queries from customers, easing communications between AS/400 minicom-

puters and Macintosh systems is now near the top of the "to do" list. "The first products for the line are expected by year's end."

Users interviewed recently were eager to see improved Macintosh-to-AS/400 interoperability.

"Connectivity could certainly get a lot better. There's a fundamental dissimilarity between the systems," said Carson Soule, president of Computer Applications Specialists, Inc., an independent software firm in Burlington, Md. Soule said many members have connected the machines, and "many more would hook them together if the connection was easier."

Calling for help

IBM could not provide precise figures on the number of AS/400 customers who have connected Macintoshes to the system, but Sandy Gant, an advisor at IBM's Interoperability Center in Dallas, estimated that about 20% of the 60-odd calls she receives monthly are from users seeking help with this issue.

"I'm looking for transparent communication, where I can have access to files on the AS/400 without losing the power of the Mac," said Stephan Rathbun, a systems operator at Wings for Learning, a distributor of educational products in Scotts Valley, Calif.

Fury pegged late 1992 for delivery of such a product, namely a server based on Data Access Layer (DAL), which is Apple's current Mac-based language lets Macintosh users access relational database information stored on minicomputer and mainframe hosts. A DAL server is a "high priority for us," Fury said. Apple has licensed DAL to several vendors this year.

Overall, users said that while current communications between the two systems may be acceptable, it preempts them

from taking full advantage of the strengths of each machine because Macintoshes must emulate dumb terminals.

"The Mac can't act like a Mac when it's talking to the AS/400," said Gene Gelleman, president of Common, the national IBM midrange computer user group.

WMAQ, an NBC affiliate in Chicago, experienced keyboard mapping incompatibilities. One of the most common ways to get

AS/400s to talk to other hardware is via IBM's Systems Network Architecture. But the protocol does not support AS/400's native 5250 emulation on Apple hardware.

So Macintoshes networked to the minicomputer must emulate 3270 terminals, which, users complained, can cause keyboard mapping problems. When WMAQ tried to connect several Macintoshes to a central AS/400 earlier this year, the station saw

ongoing network and AS/400 emulation disruptions.

The station finally demanded that Apple and Andrew Corp., its third-party software provider, come in and solve the problem.

"That multilevel translation can be difficult," Gant conceded. The 5250 emulation should provide relief and is due out in the first half of next year, Fury said. Also slated for release at that time is a Macintosh version of IBM's PC Support product.

War rages over DECstation's loss of OSF/1

BY MARYFRAN JOHNSON
CW STAFF

The "flame war" were raging on the international Usenet newsgroup last week, as disgruntled users aired their views on Digital Equipment Corp.'s changing Unix strategy.

"Call up your sales critter and complain" was typical of the advice repeated by users who are angry with DEC's stated intention not to run the Open Software Foundation's OSF/1 Unix on its DECstation line. Those workstations and servers are based on Mips Computer Systems, Inc. RISC processors. They currently run an initial release of DEC/OSF/1 and DEC's own Unix variant, Ultrix.

DEC officials emphasized last week that customer demand for DEC/OSF/1 on the Mips-based line could still change their minds. However, DEC/OSF/1 is currently slated only for the company's Alpha reduced instruction set computing platform, due out by year's end.

That scenario, several users suggested, leaves thousands of DECstation customers with the choice of migrating to Alpha or sticking with an Ultrix platform whose future is uncertain.

"I think people feel betrayed," said Michael Santangelo, the Unix and VMS systems manager at the University of Maryland University College in College Park. "I haven't seen this much [discussion over

Usenet] since Hewlett-Packard decided to do Apollo. This is even worse." He suggested users "stop the flame wars on this subject" and promote ideas such as encouraging DEC to outsource its Ultrix and DEC/OSF/1 development to the comp.unix.ultrix and comp.sosydec newsgroups.

Usetnet is a loose collection of bulletin boards containing a variety of "newsgroups" for back-and-forth commentary on some 2,000 different topics. Discussion about DEC's Unix policy reversal was taking place last week in the comp.unix.ultrix and comp.sosydec newsgroups.

Willing to reconsider? Many users speculated that DEC is floating a trial balloon on this issue. They said they hope that if enough customers complain, it will be shot down. "We need these machines to have a future. I sure hope they'll reconsider," said John Hascall, a software engineer at Iowa State University's computation center.

A user from upstate New York said his third-party software costs "will increase significantly if I have to run my software on mixed platforms."

One DEC customer at the University of Wisconsin-Madison is so annoyed at what he sees as DEC's treatment of his purchase plans for Alpha machines. "We will have DEC/Mips-based boxes on which we wish to run as parallelable as possible... for several years."

A user from a geoscience firm recommended harsher measures. "Stop bothering to deal with a company that has accomplished nothing but utter confusion in years," he said, "and go with someone who has shown some consistency and dedication. Sun maybe, or Next."

At another technical site, one systems manager said plans to purchase a number of DECstations this summer have been sidelined. "I've already recommended to management that we consider removing Mips-based DECstations on the list."

DEC employees were also taking part in the Usenet discussions — sometimes defending the company line but just as often siding with irate customers. "Personally I think this is a bad decision," one DEC employee said. "This makes me look like a liar with some of my customers, since I told them we'd support OSF/1 on Mips."

"I still think having one Unix-based operating system is a good plan, but it's basically a no-win situation," another DEC engineer added.

Still another DEC employee explained how the company got "stuck at the intersection of two events" referring to the Mips 4400 chip's arrival to market, performance levels already announced by IBM and Hewlett-Packard Co. and the Alpha chip's turning out faster than ever anticipated. "Things always look simpler from the back seat of the car," he said.

Source: Computerworld

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**WILLIE
NELSON,
STEVE
EARL,
JOHN
PRINE,
AND LARRY FISCHER
ADD TO
CONTINUE ON?**

NEWS SHORTS

IBM sues Comdisco again

IBM, its leasing and finance subsidiary IBM Credit Corp. (ICC) - and two ICC partnerships last week sued Comdisco, Inc. again, charging the third-party computer leasing giant with cannibalizing 17 IBM 3090 mainframes. The complaint was filed in Delaware Superior Court, which is gearing up to hear the IBM v. Comdisco case filed in January 1991. In that case, IBM first accused Comdisco of illegally selling and re-leasing IBM parts and, according to many in the leasing arena, hung a pall over the practice of computer reselling.

Sprint, Centel plan megamerger

U.S. Sprint Communications Co. and Centel Corp. have reached a definitive agreement to merge into a single telecommunications service company, it was announced last week. The new Sprint will have an asset book value of nearly \$14 billion and annual revenue of \$10 billion. Centel is a Chicago-based firm that provides local exchange telephone services in six states, as well as cellular communications systems in a variety of metropolitan areas. In addition to its long-distance services, Sprint provides local telecom services in 17 states through its United Telephone operating companies.

Prime buys Intel service group

PrimeService, the support division of Prime Computer, Inc., bought Intel Corp.'s North American Field Service and Customer Training group. Financial terms were undisclosed, but officials said the Intel staff will now work for Prime. PrimeService, which brought in 45% of Prime's total 1991 revenue of \$1.4 billion, will now service Intel's base of 800 customers who require support for OEM products and maintenance on Intel's Multibus and private-label platforms. Approximately 30 of the Intel technicians moving to Prime are Novell, Inc.-certified network engineers, which Prime previously lacked.

IBM clone maker to debut in Europe

IBM's European clone subsidiary has a name. Officially slated to begin business Friday, International Computer Products International (ICPI) will be a renamed version of IBM's UK Data Processing Systems unit, according to UK sources. ICPI is scheduled to formally unveil a notebook computer and a desktop model in London on Thursday. Although IBM insisted this is not its announcement, Bill McCracken, general manager of Personal Systems for IBM Europe, is expected to be there.

SunExpress sets up Japan

SunExpress, a business unit of Sun Microsystems, Inc., last week expanded its operations into Japan to provide a new distribution channel for quick order of Sun products by phone or fax. SunExpress offers customer-installable products such as storage, supplies, accessories, software and bus expansion products. Japan has been Sun's fastest-growing geographic market for the past year, and International Data Corp. recently reported that Sun has a 25% share of the workstation market there.

Short takes

AT&T will make its InterSpan Frame Relay Service available in Europe later this year through its AT&T Intelsat subsidiary. Initial availability will be in the UK, France, Germany, Belgium, Spain, Sweden and the Netherlands. ... Borland International, Inc. and the Software Developer's Co. (SDC) have completed the sale of SDC's Brief and Sorceror's Apprentice product lines to Borland. ... Unisys Corp. has set up a data communications marketing link between the U.S. and joint-venture company Tianshi Unisys Ltd. in India. ... SHL Systems Inc. has signed an \$11 million contract with the Canada Post Corp. ... Microsoft Systems, Inc. has inked a deal with Granite Communications, Inc. to install Granite's Vi-deop data communicators into its point-of-sale systems. ... Bellcore and Travelware Software, Inc. both said they will support Apple Computer, Inc.'s Newton pocket organizer with their communications products.

More news shorts on page 16

Firestone turns off Unix road

BY ELLIS HOOKER
CW STAFF

ROLLING MEADOWS, IL. — After hitting the skids on a multiyear effort to revamp its car repair centers nationwide with a network of open systems, Bridgestone/Firestone, Inc. has quickly restarted the project with midrange DOS.

The tire company recently awarded San Jose, Calif.-based IGC a contract to supply its VM/386 MultiUser Operating System — a midrange DOS operating system — to 1,600 Firestone Master Care Service Centers nationwide.

Troubles with the Master Care Project surfaced early last year when Bridgestone/Firestone sued its database vendor, Oracle Corp., for \$10 million. The lawsuit charged Oracle

with failing to deliver its SQLForms 3.0 and RDBMS 6.0 database products on time or with the required features. Citing the ongoing suit, Bridgestone/Firestone information systems executives declined comment on the decision to jettison Unix.

But observers outside the tire company speculated that the Master Care Project ran into trouble in part because of its scope. The project involved a vast array of the centers' in-store computers and applications as well as the wide-area network linking them together.

Plans for that network, using AT&T's Software Defined Network data network, were also scrapped, according to sources.

"I would not say they lowered their sights [by moving off Unix]. . . . I'd say they now have

a phased implementation, which will be enhanced over time," said David Chittum, president and chief executive officer of Burbank, Calif.-based AMS, Inc. AMS is supplying a version of its computerized Epcat-2 parts catalog for the IGC platform.

In addition, a point-of-sale (POS) system being developed internally at Bridgestone/Firestone will run under the IGC operating system. The system will replace the existing dedicated NCR Corp. POS devices.

About the only part of the original plan being retained will be the hardware platform: AT&T Work Group System Center computers.

IGC President Timothy J. Miller said the VM/386 software will be rolled out to the service centers at the rate of about 100 stores per month.

change to trade one contract against another between heating oil, fuel oil and crude.

The firm's software enables traders to monitor transactions in real time. The system displays the high end and low end of trading prices, the depth of the market and the aggregate volume available for trading.

Daffron said AT&T was hired for its expertise in networking, hardware and network management. Under its five-year contract, AT&T is providing NYMEX with three StarServer PT fault-tolerant computers and 38 StarServer servers, connected over an AT&T StarLAN local-

NYMEX to gain ACCESS to 24-hour on-line trading

BY THOMAS HOFFMAN
CW STAFF

NEW YORK — A 24-hour on-line trading system is expected to bring the New York Mercantile Exchange (NYMEX) a 10% to 15% increase in trading volume — possibly 25% if links to foreign exchanges are added.

NYMEX's American Computerized Commodity Exchange and Services System (ACCESS), slated to go live before the end of this year, is a product of the dramatic changes in the world oil market, according to Stephen C. Daffron, NYMEX's senior vice president of planning and information services.

Although the Organization of Petroleum Exporting Countries (OPEC) once dictated prices, disarray within OPEC during the 1980s shifted price-setting power to traders on the floors of the world commodities exchange, Daffron noted.

Oil first priority

ACCESS, a fault-tolerant network of personal computers and Unix servers, will primarily handle oil futures and options but will also process options and futures trading on platinum and gasoline. The network will link to NYMEX's four Tandem Computers, Inc. Cyclone fault-tolerant processors used to manage its back-office operations.

NYMEX currently handles 85% of oil futures trades worldwide each day, but its trading floor opens from 9:45 a.m. to 3:10 p.m. That translates to 185,000 to 200,000 oil contracts each day, or 150 million barrels of oil at approximately

\$20 per barrel per day.

NYMEX began developing a system of futures trading systems in July 1989 and, in November 1990, chose AT&T and Task Management, Inc., a Chicago-based software firm, as developers.

Task Management had developed continuous trading systems for the London Futures and Options Exchange and the Sydney (Australia) Futures Exchange.



ACCESS is expected to bring NYMEX a 10% to 15% increase in trading volume; system will mainly handle oil futures and options

"We wanted someone who understands not only the trading systems environment, but someone who was up to date with the software required, since most trading software is antiquated," Daffron said.

In addition to wanting a Unix-based software system with DOS workstation capabilities, NYMEX required a package that included a "crack spread," according to Glenn R. Windstrup, president of Task Management. A crack spread enables the ex-

change network. Each StarServer supports 24 users and eight others on a backup basis in a clustered environment. Overall, the StarServers support 816 U.S.-based NYMEX trader workstations at member exchange firms, with one-third of those in N.Y.

AT&T has also constructed an alternate data facility for NYMEX in Rochelle Park, N.J. In the event of a disaster, NYMEX will be able to resume trading through the alternate data center within an hour.

PC giants consider office link

CONTINUED FROM PAGE 1

details of its recent reorganization.

Application suites were designed to tempt corporate buyers into standardizing on a family of one vendor's applications through low prices and common interfaces. The move by Borland and WordPerfect is likely in response to a market share threat that analysts said the competing offerings represent.

Introduced in October 1990 and at Comdex Spring '92, respectively, Office and SmartSuite offer full-blown word processing, spreadsheet, graphics and a single-node E-mail license. With both packages priced at about \$795, buyers essentially get a free application.

"Any other companies that want to present themselves as one-stop shopping really have to pay attention" to the bundled suites, said Bill Higgs, director of software research at Computer Intelligence/InfoCorp.

Analysts marked the discussions as an indication of software industry acceptance of such bundling. "It certainly is a validation of the idea that these suites are a trend," said Jerry Berst, editor of industry newsletter "Windows Watcher." Berst said Office had been selling "phenomenally well."

Bundled software also allows vendors to introduce less popular software into the corporate mix. In the case of Word-

Perfect and Borland, it would also allow access to a potential gold mine of untapped users, as the companies both market successful packages to their respective user bases.

Perfect opportunity

Noting that there is also a tendency for WordPerfect customers to use Lotus' 1-2-3, "Borland gets a great opportunity to find and market to them," noted Amy Wohl at Amy D. Wohl Associates in Bala Cynwyd, Pa. It could also give WordPerfect's Office product a much-needed larger audience, she said.

However, Terry Quinn, an analyst at Kidder Peabody & Co., expressed skepticism that the two companies could come up with the right mix of products. "To finish off the suite, they need a graphics package," he observed. Borland does not offer graphics software, and WordPerfect's DrawPerfect is not a household graphics name.

Quinn also questioned the need for a database product in such a suite. Whereas Lotus and Microsoft offer a common interface throughout products in their respective bundles, Borland and WordPerfect could potentially lack commonality, he pointed out.

A second sticking point is the fact that such a suite of applications includes two products that are not yet on the market,

Borland does not expect to ship Windows versions of Quattro Pro and Paradox until late this summer.

In spite of the drawbacks, users applauded the bundling concept as a chance to keep their software budget in line. "It sounds great to me," said Linda Deinberg, a network specialist at Pujasawa Pharmaceutical in Deerfield, Ill. "We use WordPerfect and Paradox, and if one is going to be almost free, it certainly is an incentive" to buy.

Clifford Cuellar, a computer technical specialist for the state of Washington's Department of Natural Resources, pointed out that Borland could benefit from WordPerfect's print driver expertise, while WordPerfect could use more experience in object-oriented programming.

YEARS 20 ENCE

Check out the Marketplace Pages on Page 91.

COMPUTERWORLD

NetWare for VMS comeback infringes on DEC's plans

BY ELISABETH HORWITT
CNET STAFF

BELLEVUE, Wash. — NetWare for VMS has come back from the dead to haunt Digital Equipment Corp.'s plans to provide VMS capabilities within its own Pathworks environment.

Originally developed for Novell, Inc. by Interconnections, Inc., the product is said to enable NetWare clients to use DEC VAX drives as additional DOS stor-

age to share files with VMS users and print files on VAX machines.

Novell officially discontinued it last February when it announced an agreement with DEC to integrate NetWare with VMS via DEC's Pathworks client/network software.

Interconnections, an Emulex Corp. subsidiary, then took back NetWare for VMS and reintroduced it in March as File Sharing Services. The reincarnated product is finding a niche not only among for-

mer NetWare for VMS customers but also among those who are unwilling to wait for DEC's Pathworks-based offering.

While DEC has promised an initial announcement sometime this year, full NetWare/VMS integration is unlikely to arrive for about two years, according to Jamie Lewis, a vice president at the Pathworks Group, a Salt Lake City-based consulting firm. That market window is interconnections' opportunity, he added.

The U.S. Postal Service's division in Anchorage, Alaska, recently implemented File Sharing Services as a way for DEC and NetWare users to access either NetWare or VAX/VMS printer services, according to Jim Millman, supervisor of electronic data processing systems operations. "This has kept us from needing to

put a second terminal on users' desks."

The Anchorage division was not impressed with what it has seen of Pathworks, Millman said. "We also heard complaints from other [postal service] sites about the complexity of configuring Pathworks for both VMS and the LAN."

DEC has provided vague and conflicting information about what Pathworks for NetWare will actually do, sources said. One point of conflict is whether the product will let NetWare users access VMS services via Novell IPX, said Mark Roy, a network operations consultant at John Hancock Financial Services in Boston. Currently, users need IPX for NetWare servers and DECnet for VAXs, which creates "RAM cram," Roy said.

Several customers said they were put off by Pathworks' client-based — rather than server-based — pricing structure, which penalizes them for purchasing a limited number of clients for a large number of clients. "Costwise, it may be more advantageous for us to stick with [Interconnections]," said Don Edwards, a network analyst at M. W. Kellogg Co. DEC would not comment.

Customers applauded Interconnections' readiness to add enhancements. "Novell didn't do anything except a few touchups," Edwards said.

For example, with the Interconnections product, users no longer have to do an "ecofit" to resolve differences between the types of Ethernet packets used by NetWare and VMS systems. Interconnections has also added support for VMS Version 5.5 and promised support for NetWare 3.X releases by year's end. NetWare for VMS ran only on older VMS and NetWare Version 2.X systems.

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Novell to resell Gupta products

BY JEAN S. BOZMAN
CNET STAFF

MENLO PARK, Calif. — Gupta Technologies, Inc. is expected to disclose this week that equity Novell, Inc. will soon distribute Gupta's relational database and related software tools.

Novell's vast distribution channel should help 8-year-old Gupta boost sluggish sales, which reached only \$23 million last year, analysts said. Novell owns 19% of the relational database management systems vendor.

The products, which will be distributed worldwide by Novell, include Gupta's SQL/Windows 5.0 RDBMS, its SQL/Windows application development tool kit and its Quest ad hoc query package for end users. Novell was not available for comment.

The deal could hurt sales of NetWare SQL, Novell's own RDBMS for personal computer local-area networks, said Richard Pfeilstein, president of Performance Computing, Inc. in Chicago.

"It adds a degree of credibility over other RDBMSs but only until Novell makes an agreement with somebody else," added Donald Feinberg, a software analyst at Gartner Group, Inc. in Stamford, Conn.

Novell is already supporting Sybase, Inc.'s NetWare Loadable Module (NLM) for the Sybase SQLServer on NetWare 3.1.1 LANs. An Oracle 6.0 NLM also runs under NetWare.



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CLIENT/SERVER ARCHITECTURE FOR THE ON-LINE ENTERPRISE

Users leery of multiprocessing

Many to stand by PC LANs until more needed features are given to gear

BY MICHAEL FITZGERALD
CW STAFF

While personal computer hardware vendors chase after multiprocessing as though it were the Holy Grail, users have far expressed limited desire to join the crusade. Alternatives such as PC local-area networks may keep multiprocessing a niche market when the technology stabilizes sometime in 1993, analysts contend.

Stumbling blocks include a lack of tested operating systems and application software as well as few tools that adequately measure performance gains from asymmetric multiprocessors such as Compaq Computer Corp.'s SystemPro (see story at right).

"We now have enough other architectural and topological ways to put systems together because of networking software so that multiprocessing is no longer the only logical growth path," said Peter Kastner, vice president at Aberdeen Group, a consulting firm in Boston.

Serious doubts

Touted as something on which users can run heavy-duty applications without spending money that manufacturers claim, multiprocessing servers have met with some user skepticism, particularly among users with little interest in Unix.

Nationsbank Services, Inc., for instance, is testing the most powerful single-processor IBM Personal System/2 Model 95

against a Compaq SystemPro and will then pit the winner against superservers from Parallel Computer, Inc., NetFrame Systems, Inc. and Tricord Systems, Inc. Nationsbank does not expect the superservers to be show-ins to win.

"When you look at the multi-

Technology, Inc., a consulting firm in Hampton, N.H. Compaq would not give numbers but acknowledged that only 15% of SystemPro users use two processors. Because the SystemPro is based on the DOS environment and DOS was not designed to use multiple processors, some

ed servers, and unless you're running Unix, we haven't figured out what a good use for it would be. Maybe down the road we'll use it," said Bill Lodge, project leader at Turner Corp., a contracting firm in New York.

Still, al-Hilai projected that as applications become available, we will make use of that, and as we start downsizing, multiprocessing will become attractive for applications and databases but not for file servers."

Future outlook
Microsoft Corp.'s Carl Stork, vice president of business systems development, said Windows New Technology will lead to a major market for multiprocessors.

"I would be surprised if two-processor systems were not reasonably common on desktops within five years," Stork said.

Analysts are less inclined to agree, but most said they see a need for multiprocessing server-oriented products, despite their slow start.

"The hardware is not early. They're right on target, and if there was software, we would buy it," said Natasha Krol, application program director at Meta Group, Inc. "What's lacking — and there's no great news there — is the tools." She added many applications will have to be rewritten for new architectures, "but it's manageable."

According to M. Segaloff, editor in chief of "Outlook on Peripheral Computing," said that in a server-based transaction processing environment, multiprocessing "makes a lot of sense — you don't have to upgrade, and you can offload things that need more power" to other processors.

Direct aim

Multiprocessing is old hat in proprietary environments such as the IBM or Unisys Corp. mainframe worlds, in part because the operating systems are built to run on more than one processor.

In the PC server world, operating systems typically handle multiple processors with difficulty, and hardware has tended to be built around asymmetric architectures. The goal of most vendors is to build symmetric multiprocessors.

"Very simply, a symmetric multiprocessor means each processor can do anything any of the other processors can do," said Kimball Brown, a senior IC hardware analyst at International Data Corp. in Mountain View, Calif. "An asymmetric system usually has one processor dedicated to I/O and one or more dedicated to data."

Brown said asymmetric systems are better suited to design but less effective in an environment with a great deal of I/O. "The second and fourth processors only add incrementally — you don't get close to linear performance," Brown said.

MICHAEL FITZGERALD

MP-Mighty powerful or miffed products?

Potential

- Scalable architecture
- More processing power
- Dedicated processor capability
- Cost less than large systems

Peril

- Few software packages; either operating systems or applications
- Asymmetric architecture offers little performance increase.
- Cost more than uniprocessors

CW Chart: Jodi Genova

processing concept in an asymmetric environment [such as Novell, Inc.], at what point does multiprocessing performance actually start degrading vs. Intel's rate of producing faster processors?" queried Wesley Bryant, Nationsbank's manager of new technology. He said the real question for the bank is, "Do we ever get to a multiprocessing server-type of need?"

Compaq, which dominates the relatively tiny market for multiple-processor, PC-oriented servers — having created the market in 1989 with its SystemPro — has sold only 32,000 systems, according to WorkGroup. SystemPro users report little or no performance gain from the second processor.

Even at the First National Bank of Boston, which had a dual-processor SystemPro running Banyan Systems' Inc.'s multiprocessor-capable Vines operating system, "we took off [the second processor] because it wasn't being used very much," said Hilt al-Hilai, senior section manager of the technology integration center at the bank.

Another SystemPro user who runs Vines said he received little or no benefit from dual-processing SystemPros.

"We don't have heavily load-

Matte 3000 and optional small-socket network and peripheral adapters that are a good idea.

Zweckleinbaum also said TI had done a good job of tailoring the products to run Microsoft Corp.'s Windows 3.1. These include TI's Drag N Go utility, which lets users move a file from one application to another by clicking on icons.

Races on

While TI's TravelMate 4000 line does not feature upgradability, analysts said the 5.6-pound Travelmate 4000, WinSX/16, WinSX/25 and WinDX/25 were innovative. "I'm impressed with what they've done," said Richard Zweckleinbaum, senior personal computer analyst at International Data Corp. in Framingham, Mass.

He said TI's BatteryPro power management software made its claim of four to five hours of battery life seem believable, its display is much improved over the good display of the Travel-

Traveling system

TI's new portables target the price-conscious power user

	TM4000 WinSX/16	TM4000 WinDX/25
CPU	16-MHz 486DX	25-MHz 486DX
Main memory	4M bytes RAM, expandable to 8M bytes	4M bytes RAM, expandable to 20M bytes
Mass storage	80M-byte hard drive	120M-byte hard drive
Software	Windows 3.1 & MS-DOS 5.0 BatteryPro Power Management	
Price	\$3,199	\$4,399
Availability	July	July

CW Chart: Michael Sippel

Analysts said Tandy's notebooks were impressive as well but that their 60M-byte hard drive maximum, in this configuration, might be a drawback for the market.

The Tandy 4800 HD uses a 20-MHz 486SX and will sell for \$2,999, the same price as Tandy's recently announced 386SL-based 3330 notebook.

The \$3,499 Tandy 4860 HD uses Intel's 33-MHz 486DX. Both models weigh less than 6 pounds have 60M-byte hard drives and 4M bytes of random-access memory, expandable to 20M bytes.

Some analysts said 486 notebooks may well become the standard for corporations purchasing new notebooks by 1993.

TI, Tandy to ambush 386 notebooks with 486 attack

BY MICHAEL FITZGERALD
CW STAFF

TEMPE, Texas — Texas Instruments, Inc. and Tandy Corp. have jumped into the 486 notebook saddle with pricing aimed at pushing 386 notebooks off the fast track.

Both TI and Tandy's Intel Corp. 486SX-based notebooks are priced around \$3,000, a point below the list price for 80386SL-based notebooks from companies such as Compaq Computer Corp. and Toshiba America Information Systems, Inc. TI's machines are listed for availability next month; Tandy's machines are expected to ship next week.

"What would you buy, a 486 or a 386, if the price on the 486 was less?" asked Nasir Ahmed, TI's portable products marketing manager.

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Bank IS fights outsourcing challenge

Race to farm out is receding, but in-house paths far from guaranteed

BY NELL MARGOLIS
CW STAFF

The information systems outsourcing market, which seemed the U.S. banking industry in the last several years may not be over, but it has hit one doozy of a kill.

The virtual standstill in last year's fast lane is the result of several factors, according to banking analysts. For one, banks in general have pulled out of the bottom-line panic that had recently driven them to out-sourcers in droves. With the worst of their losses now written off, many banks can afford to sit back a bit and smell their IS options.

In addition, noted Kevin Moody, an analyst at Technology Investment Strategies Corp. in Framingham, Mass., a recent federal investigation into prac-

tices associated with bank outsourcing may have left some banks leery of entering into deals that might appear tainted.

And, "The rush has already occurred, so many of the banks that were going to outsource already have," Moody said.

For analysts who still expect outsourcing vendors to simply fold their tent in the banking arena, whatever form the next round takes, however, out-sourcers will find themselves competing with a tighter, tougher IS organization.

"We're not technically bidding, but we act like we are,"

group contracts within the Barnett family, he said, "we commit to a level of service, we commit to a line of delivery, and we commit to a price."

Late last month, The Chase Manhattan Bank NA ended a month-long flirtation with outsourcing core IS operations to IBM subsidiary International Systems Solutions Corp. (ISSC), opting to deal with its own vastly reorganized IS shop, Lie Barnett Technologies, however, Chase's IS department reportedly had to beat ISSC's offer to get the business.

At First Chicago Corp., Chief

Information Officer Donald Holton will soon pledge to provide internal customers with service at a price that is equal to or less than EDS.

In bidding against outside IS providers is really a significant departure for financial organizations' internal IS operations? Bank on it, said M. Arthur Gillis, president of banking consultancy Computer Based Solutions, Inc. in Jacksonville, Fla. "If you want to survive, you had better act as if you're in competition with outsiders — because, in effect, you are."

In November 1990, Barnett Technologies was spun off as an independent, for-profit subsidiary of Barnett Banks. Currently, the banking group provides some 80% of the technology group's annual revenue, said Palmer, who is also chief technical executive at Barnett Banks.

"We treat internal clients the same way we treat our outside clients with tender loving care," Palmer said. Every time his

No more complacency

The recent outsourcing boom has raised the curtain on internal IS complacency in two areas, Gillis said. First, smaller and scaled banks welcomed outsourcing at a quick fix for bloodied bottom lines, a move that scuttled the assumption that a bank would be slow to bypass its own IS shop.

Now, Gillis said, those banks that have not already faced out core IS functions are in less of a rush to do so — thus the "pathetic" 1992 deal tally to date (see chart). However, he said, several years of seeing what the outside specialists had to offer left banks too savvy to settle for the status quo. "Today," he said, "bank managers are ready to tell their IS shop, 'If an outsider can do better, an outsider will.'"

Bank executives agreed that this will continue to be the case as most large banks at least some of the time. "It's been a real education," said Michael Packer, acting vice-president of technological strategy planning at Bankers Trust, New York Corp. "You can't just say, 'Banks should outsource' or 'Banks never should outsource.' Which bank? What kind of outsourcing deal? Under what circumstances?"

Integration arm McDonnell Douglas Systems Integration Co. [CW, Nov. 11, 1991], which is believed to have been a roadblock to the deal.

The McDonnell Douglas job is expected to include manufacturing software from EDS equity partner The Ask Cos. and computer-aided design software from Unisys. EDS' operations arm, McDonnell Douglas, EDS declined to comment, McDonnell Douglas did not respond to queries by press time.

According to Tom Nolle, president of consulting firm Cletis Corp. in Varrehe,

team chief again alluded to strides in PC computing.

Meyerson said the mainframe "still has a place" in corporate computing but that its role "is substantially less" than when he worked at EDS.

While Perot Systems and EDS have competed head-to-head for a number of outsourcing



Meyerson says Perot will target areas that EDS does not — but he would not elaborate.

parts, Meyerson said he intends to avoid direct competition with his former company. He said Perot Systems will try to target industries and areas that EDS does not emphasize, although he would not specify what those areas might be.

"It's like when I was at EDS, and there was IBM. It was smarter to go places where they're not," Meyerson said.

One disadvantage in competing with EDS is the relatively small size of Perot Systems, which has 1,600 employees and operates on a run rate in excess of \$200 million. By comparison, EDS has 70,000 employees and generates \$7.1 billion in revenue last year.

Perot Systems recently won two outsourcing contracts in Europe totaling \$1 billion [CW, May 11]. One of these was to replace a mainframe system with a Unix-based client/server solution for Boulogne, France-based Europcar International.

No longer breakable

Outsourcing activity among banks has slowed considerably this year

	*Number of financial institutions outsourcing	Total asset value
1990	45	\$1886
1991	58	\$3148
1992**	10	\$128

*Includes only commercial banks and thrifts with more than \$500M in assets.
**As of May 15

SOURCE: Computer-Based Solutions, Inc.

CW CHART: MICHAEL SAGIN

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"We're not technically bidding, but we act like we are,"

EDS negotiations proceeding with McDonnell Douglas — but slowly

BY MARK HALPER
CW STAFF

DALLAS — Uncertainty over government military spending is believed to be dragging out outsourcing discussions between Electronic Data Systems Corp. and aerospace vendor McDonnell Douglas Corp.

The two companies are hashing out a deal believed to be worth at least \$150

million over five years, sources close to both companies said. St. Louis-based McDonnell Douglas is reportedly awaiting congressional budget action before committing to the outsourcing of production engineering systems, the sources said.

Both firms have engaged in on-off, off-agenda talks for about two years. The discussions advanced last fall, after EDS bought McDonnell Douglas' systems in-

tegration arm McDonnell Douglas Systems Integration Co. [CW, Nov. 11, 1991], which is believed to have been a roadblock to the deal.

The McDonnell Douglas job is expected to include manufacturing software from EDS equity partner The Ask Cos. and computer-aided design software from Unisys. EDS' acquisition from McDonnell Douglas, EDS declined to comment, McDonnell Douglas did not respond to queries by press time.

According to Tom Nolle, president of consulting firm Cletis Corp. in Varrehe,

N.J., EDS is keenly eyeing the aerospace industry because budget cuts are predisposing companies to seek out-sourcers. At McDonnell Douglas, like at other large manufacturing companies, core operations provide computing services to other groups. If those core operations were to be cut, the company would then be inclined to hand over the services duties to an out-

sourcer, Nolle pointed out.

Military aircraft procurement totals

last year topped out at \$9.4 billion, a 39% drop from \$15.3 billion in 1990.

Apple tailors handheld organizer for busy execs

BY JAMES DALY
CW STAFF

CHICAGO — Apple Computer, Inc. last week plucked the first fruit from its newly formed Personal Interactive Electronics Division, announcing a long-awaited handheld executive organizer that many users said they can't wait to stuff into their pockets.

The tiny machine, called Newton, is not a version of the Macintosh but is the first of what Chairman John Sculley has called "personal digital assistants," a new class of handheld devices brought about by the convergence of the personal computer, communications and consumer electronics industries.

"This is not a slowdown-down PC," product manager Michael Tchao said.

Newton, which debuted at the Consumer Electronics Show, weighs about a pound and uses an object-based handwriting recognition system that can read printed notes and then automatically add an appointment to a calendar, dial a phone or send a fax.

If a user prints "Lunch with Ted at noon Wednesday," for example, the software will place the appropriate appointment in the calendar. "Call Ted" would provide a list of phone numbers and then dial the one the user touches. Later models will add voice recognition, Apple Vice President Larry Tesler said.

The system will include basic applications software, with some versions being customized for particular industries.

Built for Apple by Sharp Corp. in Tokyo, Newton will sell for less than \$1,000 when it goes on sale early next year, Tchao said. Sources said that price could drop to as low as \$700.

Many users said Newton could be a big hit with busy executives or salesmen if it fits into their Apple's "laptop." "We're already sold on the palm-top and pen-based technologies but still haven't seen them implemented to our satisfaction," said

Steve Birgfeld, manager of computing standards at the information systems division of Martin Marietta Corp. in Cheverly, Md.

Birgfeld added that Newton will need to offer an instant boot-up and a simple way to transfer data in order to score points at his firm.

Officials at Cupertino, Calif.-based Apple said Newton will network with other PCs via a built-in wireless infrared link. They added that Apple and third-party software vendors will also provide linking software that allows Newton to work in multiprogram environments.

Richard Lester, vice president of infor-

mation services at Associated Grocers, Inc. in Seattle, expressed some interest in outfitting his sales staff with Newton but only if it offers substantial amounts of storage.

"Our salespeople like to stuff a lot of information in their machine, and Newton would need to be able to handle that," he said. "If it did fit the bill, we'd be pretty pumped up about it."

Apple officials were short on specifics about how much storage Newton would offer but noted that customized versions of Newton will be made available with varying capabilities.

The machine will also employ a super-



Apple's Newton can read printed notes, dial a phone or send a fax

fast microprocessor that will be produced by a joint venture set up last year by Apple and chip makers VLSI Technology, Inc. and the UK's Acorn Computer Co., sources said.

EIS II: THE FIRST ENTERPRISE-WIDE SOLUTION.

Tandy, Zenith eye palm-size CPUs

CHICAGO — Both good things and profits can come in small packages, or so Tandy Corp. and Zenith Data Systems hope as they join Apple Computer, Inc. in the market for handheld organizers.

Tandy announced a joint venture with Japan's Casio Computer Co. to create what it called Personal Information Processors. GeoWorks, Inc. will supply its Geo operating system, and Palm Computing, Inc., a Tandy subsidiary, will supply application software. The companies expect to ship products sometime in 1993.

The group offered no price for its products, but sources said it would aim for the \$500 price range.

Zenith Data began shipping its ZDS-106 and ZDS-112 Pocket Organizers. Using Zilog, Inc.'s Z-80 chip, an 8088-compatible processor, the organizers will weigh under a pound, run for four hours on two AAA batteries, and measure 3½ by 6 in. The ZDS-106, with 64K bytes of memory, will sell for \$199; the ZDS-112, with 128K bytes of memory, will be \$299.

MICHAEL FITZGERALD

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New life to be breathed into NetWare V3.11

CONTINUED FROM PAGE 1

come, because I can stay fat and happy with 3.11 for two, maybe three years," Lauson said. "We can wait for 4.0 capabilities."

Other users also responded favorably to Novell's ongoing support for 3.11. "We're in the process of upgrading to 3.11 with about 25 Novell systems," said Rob Byers, network coordinator at Madison Area Technical College, located in Madison, Wis. "We probably don't care about what's in 3.2 at this point."

Not everyone worried

Some users, however, were not unduly concerned about Novell's threats to discontinue 3.11, said John O'Laughlin, manager of premise area networks at McDonald's Corp.

The One Brook, Ill., fast food giant is predominantly a NetWare 3.11 installation, "with probably one or two 286 servers around," he said. "Our first responsibility is making

sure users get a stable operating environment; it never bothered us when a vendor says, 'You have to do this.'

Novell's decision clears the way for the vendor to develop four networking product groups.

NetWare Lite supports small

WE PROBABLY DON'T care about what's in 3.2 at this point."

ROB BYERS
MADISON AREA
TECHNICAL COLLEGE

basic peer-to-peer networks; NetWare 2.2 gives workgroups simple file and print functions; 3.11 will serve medium- and large-size complex networks; 4.0 will serve large, complicated networks.

A CPU-independent version of NetWare, now referred to as 5.0, is still under development.

Several industry observers

seeysystems, Inc.'s Solaris 1.0 operating system.

"I haven't kicked any tires or taken a test drive yet, but my impression is that Windows NT is really addressing the DOS-based users who want more power,

and managers of NetWare networks expressed surprise earlier this year upon hearing that the new version would become part of the existing 3.X line [CW, Feb. 24].

Version 3.X supports Novell's Network Management Services as well as its Apple Computer, Inc. Macintosh and IBM's Systems Network Architecture connectivity, all of which aid in connecting sophisticated workgroups.

Version 4.0 will have all of the capabilities found in 2.2 and 3.11. But it will also support 1,000 concurrent users, an X.500-compliant global directory service, foreign language translation and an upgrade utility that will enable servers to be brought up from previous versions to 4.0 without shutting down the machine.

Novell acknowledged those differences and, at the request of its advisory council of customers, decided to make the next version a separate product line. One concern for McDonald's is whether NetWare 4.0 will

DEC's latest Rdb version to store large image, text files

MAYNARD, Mass. — Digital Equipment Corp. officials said last week that they will ship Rdb Version 4.1, the latest release of DEC's database management system that features global buffering and "full VAXcluster support," later this month. The product was announced last year and was originally scheduled to ship in January.

This new version of Rdb is also designed to support efficient storage of large image and text files, allowing users to begin exploring the use of multimedia applications in conjunction with Rdb, according to DEC.

DEC SERdb Version 4.1 is

also offered as an option to Rdb and is intended to meet security requirements specified by the National Computer Security Center. SERdb meets C1 level security requirements, and B1 level SERdb includes enforced mandatory access control so that data with different levels of security can be stored in one database, DEC officials said.

Both products are expected to ship before the end of the month. Pricing for Rdb Version 4.1 ranges from \$3,348 to \$15,138, and pricing for SERdb ranges from \$3,000 to \$192,000.

MELINDA-CAROL BALLOU

have a mirrored server feature, which Novell was required to be planning for NetWare 3.2, O'Laughlin said. "Novell has been talking about it for years, and it's important for critical applications," he said.

Novell's new strategy also saves an unspecified number of 3.11 users from having to upgrade to 4.X features they do not need, Young said. Another ad-

vantage of keeping 3.11 alive is that users will not have to upgrade directly from 2.2 to a far more advanced version.

Young acknowledged that 4.0's capabilities will make it a niche operating system early on, but he said, the market will grow into it just as it has with 3.X. Software developers' kits for NetWare 4.0 are shipping now, he said.

Shrink-wrapped Unix takes on Windows

CONTINUED FROM PAGE 1

quite well," said Kate Fessenden, an analyst at Metis Group, Inc. in Westport, Conn.

"There are indications to believe that 4.0 could become the Unix standard" for PCs, said Michael Goudie, an analyst at Patri-

crosystems, Inc.'s Solaris 1.0 operating system.

"I haven't kicked any tires or taken a test drive yet, but my impression is that Windows NT is really addressing the DOS-based users who want more power,

sox Architecture and Mips Computer Systems Inc. platforms by year's end. That will pit USL against two additional Unix vendors: Sun's Solaris 2.0 and SCO's Open Desktop.

Sun is also making its own run at the PC market with this fall with Solaris 2.0 available to perform. The target market for Solaris 2.0, however, is not low-end desktops but "Fortune 500" corporate environments interested in advanced networking, multiprocessing and object-oriented technology, said Mike Zadig, director of software engineering at Sunsoft, Inc.

The key move for Unix vendors in the PC arena will be to grow their market share rather than steal it from each other, analysts agreed.

Whatever it takes

Industry observers credit USL President Roel Pieper with turning USL into a market-savvy, cooperative organization during the past year.

"USL will do whatever it needs to get Unix/VMS/V Release 4.0 technology on every desktop," Goudie said.

All of this represents a marked expansion of USL's historic role as a Unix source code supplier to companies such as Sun, Amdahl Corp. and Novell, Inc.

USL will now provide both

the source code and the "customer-ready" binary code to system and software vendors, who add their own layered products, repackage the code and sell it directly to customers.

USL will ship Release 4.2 through its OEMs and through Novell, which formed the Unix joint venture with USL last December. Novell's Unixware Release 4.2, and USL will resell Unixware as both master binary and source code.

"We will have 14,000 Novell resellers who will be special incentives to resell Unixware," said Jon Menard, vice president of marketing at USL. "There will be a service and support network there for it, too."

Other changes in the wind are the establishment of USL's own "branding" program for Unix System V Release 4-compliant products and increasing cooperation and marketing deals with its sometime rival, the Open Software Foundation.

Chips and Technologies hits back at Intel patent attack

BY MICHAEL FITZGERALD
CWT STAFF

SAN JOSE, Calif. — Chips and Technologies, Inc. countered Intel Corp. last week, claiming that the Santa Clara, Calif.-based company violated its patent on page memory access. In February, Intel had sued Chips and Technologies over both its Super386 and PC/Chip microprocessors and its Super387 math coprocessor, alleging patent infringement.

In its countersuit, Chips and Technologies claimed it had not violated any relevant Intel patents. The company fired back that Intel's 90386L microprocessor's integrated memory controller violates a Chips and

Technologies page memory access patent.

In addition, Chips and Technologies claimed that Intel has attempted to monopolize the math coprocessor market.

Chips and Technologies has filed similar cases against several small chip makers.

An Intel spokeswoman expressed little concern about the Chips and Technologies counterattack, suggesting that the company had simply a response to Intel's suit.

Analysts said they agreed with that assessment.

"It sounds like a tempest in a teapot," said John Lazio, vice president and senior technology analyst at PaineWebber, Inc. in New York.

Source: Comshare industry sources

cis Seybold Group in Boston.

Users already well-ensconced in the DOS world are still more likely to gravitate to Windows NT than to Unix, said Pat Thomas, MIS director at Hickory White, a furniture manufacturer in High Point, N.C. Thomas uses The Santa Cruz Operation's (SCO) SCO Unix and Open Desktop systems, as well as Sun Mi-

Thomas said. "There's a real mind-shift jump in going from DOS to Unix."

Yet for those willing to make that jump, the MIS director added, a "certifiable, standards-compliant" Unix, such as System V Release 4, would hold great appeal for customers.

USL officials said Release 4.2 will also run on Scalable Proces-

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—John Edwards
Vice President of Marketing
Novell NetWare Systems Group

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NEWS SHORTS

DEC execs take retirement

At least six Digital Equipment Corp. vice presidents will take advantage of DEC's early retirement program, which seeks to cut its employee base of 116,000 by 7,000 by targeting those who are over 50 years of age. The vice presidents reportedly include George Chauderlie III, vice president, marketing and finance; Henry Cousse, vice president, strategic relations; James Codner, vice president, operations staff; William Hoffer, vice president, U.S. sales; and Dominic Lacava, vice president, user-based software and systems. Other executives are expected to opt for the program, but a DEC spokeswoman refused to comment last week as to who would be planning to do so. Individuals planning to take early retirement could change their decision until the end of last week.

EDS to build business TV network

Multimedia Marketing Networks, Inc. has awarded Electronic Data Systems Corp. a \$2 million, multiyear contract to install and operate a digital television network that combines multimedia and business television. Called Interactive Information Networks, the system will deliver live news conferences, product introductions and emergency announcements via satellite to journalists, analysts and investment firms worldwide.

Anderson in 1994 Olympic deal

Anderson Consulting will be back on the slopes in 1994. The Dallas-based systems integrator last week won a \$4.5 million deal to install the core information systems for the 1994 Winter Olympics in Lillehammer, Norway. The Intel-based system, update of the one Anderson deployed at the 1992 Winter Olympics, will provide on-line access of scores and athlete biographies to visitors, journalists and officials at the games. Being built with Anderson's own computer-aided software engineering (CASE) tool, Foundation, Info 94 will also help out with accommodations, transportation, accreditation and security at the winter games.

Sequoia eyes fault-tolerant Mumps

Sequoia Systems, Inc. will announce a partnership today that brings fault-tolerant, multiprocessing Unix to the health care industry for the first time. In collaboration with Hewlett-Packard Co., Greystone Technology Corp. and DataTree, Inc., Sequoia will market a centralized host system for Mumps applications in a client/server environment. Mumps is a standard programming language and database management system used in thousands of health care and financial applications.

Integrator C3 to be acquired

Government systems integrator C3, Inc. agreed last week to be acquired by WSV Acquisition Corp., a privately owned company whose shareholders are principals in Seven Cos., a Washington, D.C., integrator. Terms were not disclosed.

Oracle lands Sun factory business

Sun Microsystems, Inc. last week announced its selection of Oracle Corp.'s manufacturing and financial applications for the worldwide automation of Sun manufacturing facilities. The multimillion dollar agreement also includes Oracle's CASE products. The installation will take place during the next 18 months, involving an intercontinental network of Sun locations using multiprocessing Sun SPARCservers.

House committee strings Bell's

A subcommittee of the U.S. House of Representatives last week approved by a 10 to 6 vote a bill that would preserve terms of the AT&T/Bell breakup agreement prohibiting the seven regional Bell telephone companies from manufacturing equipment and offering information and long-distance services. The bill would wipe out a court ruling last year that gave the Baby Bells the green light for information services. Ameritech Corp. called the bill "anticompetitive, anticonsumer, antworker, antigrowth and . . . unconstitutional."

TI takes re-engineering plunge

Partnering with consultancy Price Waterhouse to target large projects

BY KIM S. NASH
CW STAFF

PLANO, Texas — Already a player in the CASE market, Texas Instruments, Inc. last week extended tentacles into the re-engineering business by teaming up with Big Six consultancy Price Waterhouse.

The two firms plan to offer RE for IE, a tool set and consulting service for re-engineering legacy systems into an application development environment using TI's Information Engineering (IE) methodology.

Analysts were enthusiastic about the announcement, saying that the partnership gives TI users a coherent way to streamline

the data and underlying business processes of older, problematic systems. TI had no re-engineering offerings until now.

"If you've got a 20-year-old undocumented application running on an old-style mainframe and [you] want to bring the system into the more modern part of your operation, you'll be interested in this," said Andrew Mahon, a senior research analyst at New Science Associates, Inc.'s Randolph, Mass., office. But it will cost you, he added.

A TI spokesman said official prices were not yet final, but Mahon, who has followed Price Waterhouse's application development endeavors closely, said, "These are multimillion dollar

projects on average."

Mahan attributed the cost to the large scope of the undertaking, which typically involves a team of programmers, consultants, Price Waterhouse's Arrene reverse engineering tool and TI's computer-aided software engineering workbench, called Information Engineering Facility (IEF). A typical revamp job could take 18 to 24 months, Mahon estimated.

RE for IE will be aimed initially at the 550 sites TI claims for IE, whose 1991 sales topped \$130 million. The new offering is now in beta testing at three undisclosed North American sites: a financial services firm, a health insurer and a federal agency.

both customer sets as priorities.

This message is apparently not reaching all users. At Southern California Gas Co., 1-2-3 has long been the MS-DOS spreadsheet standard. Yet the company recently reviewed its options for a Windows spreadsheet, and "we are in the process of writing a recommendation for [Microsoft] Excel 4.0," said Robert Holmes, a computer technology research analyst.

Holmes did not agree that the company has stayed focused on delivering top-notch spreadsheets. "In terms of their mainline products, there's been little innovation," he said.

Thinking Notes

For corporate accounts, Lotus is pushing its consulting services group, which it started two years ago and which now has about 25 clients. It is also making a serious effort to work with customers, said Michael Mandelbaum, a vice president of systems development at The Chase Manhattan Bank NA, which now has several thousand Notes users.

"With Notes, they are scaling with a class of customers that have access to before," Mandelbaum said. "Are they as good at it? They are getting better. Before Notes, I'd say not at all."

Mandelbaum said Lotus sends representatives to the Notes user group, and the company responds to comments on the Notes public databases.

In addition, Lotus worked with Chase to incorporate features into the next release of Notes, due out by year's end.

New decade, new identity for Lotus Development

CONTINUED FROM PAGE 1

tions to see how customers can really help them."

Lotus has been winning good marks from corporate customers for its support of its Notes workshop environment. But among some of its longtime 1-2-3 spreadsheet users, Lotus continues to be criticized for not being as innovative as its competitors.

Some users are making strategic decisions based on Notes. In exchange, Lotus must provide a high level of support, effectively spell out its strategy and work directly with these users to incorporate their ideas into product plans.

Staying on top

Meanwhile, the core base remains concerned with product innovations and wants to see Lotus stay ahead of Microsoft Corp. and Borland International, Inc.

"We want to see them bringing Notes-like innovations back to the spreadsheet arena," said Jude Gertland, a senior vice president at the Lehman Brothers Division of Shearson Lehman Brothers, Inc. in New York. "We want excellent products — well-featured, well-tested. We don't need an intimate relationship. We need someone to turn to if we have problems."

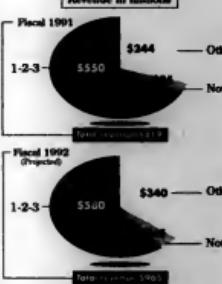
Managing the two distinct customer requirements has be-

come "the defining management challenge of the company," Jim Manzi, Lotus' chief executive officer, said in an interview last week.

Lotus' position

Once considered a one-product company, Lotus is working hard to diversify

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Survey reveals downsizing not for everyone

BY THOMAS HOFFMAN
CW STAFF

NEW YORK. — Downscaling might be one of the last things on the computer industry's radar, but one survey indicates that a large percentage of mainframe and mini-computer shops running on-line transaction processing (OLTP) applications are not downsizing en masse.

At a seminar sponsored by The Stanislaw Group International, Inc., a Hyannis, Mass.-based consultancy, most users said financial constraints prohibit them from downsizing their systems. In addition to the costs associated with migration, some users said certain OLTP applications require the robust processing power of their current mainframes and minicomputers.

Approximately 67% of the more than 300 information systems managers responding to the survey said their companies are not currently downsizing applica-

tions to smaller platforms.

James H. Johnson, chairman of The Stanislaw Group, said the survey represented 100 different applications, but he would not elaborate. Johnson did say that nearly 60% of the respondents plan to downsize their systems eventually but not for all applications.

"Because of the financial strains on the college, we're mainly concerned with putting out fires and keeping our systems running," said Sheri Prupis, director of educational computing at Baruch College in New York.

Of course, migration costs are not the only obstacles to downsizing. "Costs itself aren't a strong enough reason to

downsize," said Frank Bamberger, a vice president in retail banking at Citibank NA. "There can be big advantages to putting larger applications on smaller systems. But many of the smaller systems don't have the robustness of mainframes for all applications."

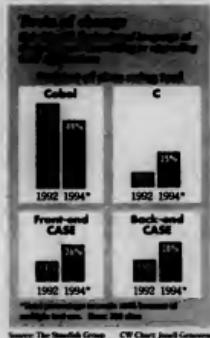
Some users attending the seminar said they saw hope for future OLTP downsizing projects. "We're seriously considering downsizing opportunities, but at the same time we're in the process of upping some applications," said Steven Stam, MIS director at the New York City Department of Sanitation.

According to the survey, while 80% of the respondents are operating in central-

ized mainframe environments, only 44% expect their data processing centers to remain centralized by 1994. Most attendees expressed a desire to migrate from centralized mainframe computing environments to two-tiered and three-tiered client/server computing models.

Citing cost constraints, Roger MacMillan, director of MIS at the Human Resources Administration for the city of New York, said, "We're moving to CASE tools [to facilitate migration], but that migration will be slow."

Meanwhile, few attendees saw Unix as a viable alternative to replacing proprietary operating systems and application software for OLTP. "We don't believe Unix gives us the security and the application functionality that we require at the bank," Citibank's Rajiv Alai said.



DEC energizes Unix OLTP line

BY MELINDA-CAROL BALLOU
CW STAFF

MATTHEW, Mass. — Digital Equipment Corp. targeted the commercial Unix market last week with new transaction processing software.

DEC's TFrame software integrates Unix System Laboratories, Inc.'s Tuxedo System/T transaction processing monitor with DEC's Ultrix/SQL relational database. Ultrix/SQL is based on the Aegis relational database management system (see story at right).

TFrame offers transaction management routines that streamline application development, a screen-oriented forms package called VForm, two ready-made clients and sample applications, DEC officials said.

TFrame's sample application programs include banking and personnel applications. By following instructions and

the provided examples, developers have a quick-start model, officials said.

DEC does not plan to make an offering available on Unix now, even though the company's strategic Unix operating system will ultimately be OSF/1, said Peter Koenigs, a vice president at Aberdeen Group, a market research firm in Boston. "It should not be difficult for DEC to do the port to Alpha once that environment is production-ready."

ACMIS will support

DEC will support OSF/1 server support for its high-end Application Control and Management System (ACMIS) transaction processing monitor later this summer [CW, May 25]. While ACMIS targets heavy volume, high-end, on-line transaction processing applications, TFrame targets midrange applications.

The initial version of TFrame supports a single host DECsystem, but DEC plans to make the software available in a multiple-host, distributed client/server version. The company will also integrate TFrame with a range of transaction processing monitors and RDBMSs. TFrame software pricing starts at \$3,530 on a DECsystem 5100.

Ultrix/SQL's future unclear

BY MELINDA-CAROL BALLOU
CW STAFF

MAYNARD, Mass. — Digital Equipment Corp. may no longer bundle the Ultrix/SQL relational database management system with the Ultrix operating system once negotiations currently under way between DEC and The Aegis Co. are completed, sources close to both companies said.

The decoupling is seen as underscoring DEC's commitment to its strategic OSF/1 operating system running on its next-generation Alpha line of computers.

DEC officials would not comment on reports of the talks and said they will continue to sell the runtime version of the Ingres RDBMS along with Ultrix "for the foreseeable future." However, sources close to Ingres said the "experiment has not worked," and the 2-year-old agreement between the two companies will soon be terminated.

"The major under discussion between ourselves and DEC," said Bill Copeland, vice president of marketing at Alameda, Calif.-based Aegis. "But we are clearly, for good solid business reasons for both companies, headed toward unbinding. We view it as a revenue opportunity to be able to sell our product to customers directly. This is not an indication that our relationship with DEC is not strong," he added.

Hardies to jump

Factors influencing Aegis' Ingres Product Division's disenchantment with the arrangement include the costs of covering support for DEC's Ultrix/SQL users and the challenges the company has faced in attempting to sell the full Ingres product to DEC's installed base of Unix customers.

DEC officials said Ultrix/SQL will definitely not be bundled with OSF/1. The company will port its Ingres RDBMS to OSF/1 and extract other third-party vendors, including Ingres, Sybase, Inc. and Oracle Corp., to bring their products over. Analysts said DEC does not want to undercut prices of its own database, or those of third parties by building a particular database with OSF/1. But DEC and Ingres will facilitate the transition to OSF/1 for Ultrix/SQL users, officials said.

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CEOs clinch pact with DOE to speed computer research

By JEAN S. BOZMAN
CW STAFF

PALO ALTO, Calif. — The doors to the nation's national energy laboratories were pried open last week for joint research and development work with 10 major U.S. computer firms, including Apple Computer, Inc., Hewlett-Packard Co. and IBM.

The chief executive officers of the 10 computer vendors signed an agreement

with Department of Energy Secretary James D. Watkins that will speed the start-up of the joint efforts.

Such agreements will give American firms a competitive advantage in key technology areas such as data storage and parallel processing, Watkins said.

They will also aid the transition away from mainframe research at national laboratories hit by recent defense cutbacks.

The CEOs, all members of the 3-year-old Computer Systems Policy Project

(CSPP), officially signed a "model" Cooperative Research and Development Agreement at HP's headquarters.

Watkins revealed that IBM had signed a specific agreement Wednesday with the University of California's Lawrence Livermore National Laboratory to establish a national storage laboratory to test new types of data storage components.

Cray Research, Inc., another CSPP member, signed a separate agreement with Livermore to study massively parallel computer architectures,



Apple's Sculley virus technology as perishable

Watkins said. In March, Cray signed the first three Cooperative Research and Development Agreements with Los Alamos National Laboratory in New Mexico.

"We don't tell the companies what to do," Watkins said. "We are making the national laboratories' human and material resources available to win the international race for the commercialization of new technologies."

Under the Cooperative Research and Development Agreements, individual computer firms will be able to hold onto technology advances for several years before making them available to the research public. A new technology is to be used only within the U.S. or within the U.S. firm's foreign subsidiaries for the first two years after its invention. Companies may enter into agreements singly or together, but no multiple vendor agreements have yet been signed.

"Clearly, the government does not want to step over the line into the commercial arena," Cray spokesman Steve Conway said. "This is about generic, or enabling, technologies. Once they're developed, anybody could make use of it."

First in line

Among the first users of the new technologies will be the Department of Energy's laboratories, including Livermore, Los Alamos, New Mexico's Sandia National Laboratories, Illinois' Argonne National Laboratories and Tennessee's Oak Ridge National Laboratory, CSPP officials said.

Speed is essential in getting research projects off the ground, CSPP members said.

"We view technology as something that is perishable because of the time it takes to get it to the market," said John Sculley, CEO of Apple and CSPP chairman. Before this, "the long [legal] procedures made it impractical for us to consider using these technologies," he said.

Sculley noted that all national laboratories spend \$70 billion each year, and only 2% of its expenditure is related to the computer industry. In contrast, 21% of all private-sector research is spent on computer-related issues, he said.

But questions about the "cultural" clash between public policy and private industry remain somewhat unsettled. "Information has traditionally been viewed as a public good from which companies can draw," said David B. Nelson, director of scientific computing at the Department of Energy's office of energy research. "But information also confers competitive advantage, which is to be held closely. That is a difference that has to be bridged."



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TECH TALK

Chip with zip

There may come a time when post office sorting equipment can read handwritten addresses. A project team funded by the U.S. Postal Service recently won a mask registration from the U.S. Copyright Office for an integrated circuit chip designed to be the core of an image scanner. The chip could read handwriting and provide information update in less than 50 msec. The chip was designed by electrical and computer engineers at the Center for Excellence in Document Analysis and Recognition at the State University of New York at Buffalo.

Making connections

A chip maker, a disk vendor and a controller manufacturer have teamed up in a race for a high-speed fiber-optic connection among computers and peripherals. Vitesse Semiconductor Corp. in Camarillo, Calif., Seagate Technology, Inc. in Scotts Valley, Calif., and Interphase Corp. in Dallas said they are working together to develop a low-cost, low-power ANSI X3T9.3 Fiber Channel chip set that could support serial communications at rates up to 16 Gbit/sec. The chip set, to be fabricated in Vitesse's 0.8 micron gallium arsenide technology, is likely to be used to link file servers or disk drives and supercomputers.

New dimensions

Picture your face as a three-dimensional image in a computer. Researchers in the Multimedia Laboratory at the Georgia Institute of Technology have found a way to scan 3-D images by developing a device that automatically generates detailed computer descriptions of complex 3-D objects. The researchers said that sophisticated animation, computer-aided design, medical visualization — often done manually with tools such as pen digitizers — would be made easier.

It's a bird, a plane — an uh oh!

BY ELLIS BOOKER
CW STAFF

Did an asteroid's impact 65 million years ago cause the demise of the dinosaurs? But more urgently: Could it happen again?

According to astronomers, there is at least a statistical danger of a large asteroid racing through space for an Armageddon appointment with planet Earth.

Lucky, given the predictable nature of space orbits, humanity would have decades to decide what to do before the collision. Some have suggested detonating nuclear warheads near the asteroid to change its trajectory.

But, before redirecting the errant asteroid, it would need to be detected.

To date, only 10% of the estimated 2,000 large objects (1 km or more in diameter) approaching Earth have been discovered and tracked, according to NASA planetary scientist Jürgen Rabe.

Rabe and other scientists recently recommended to Congress results from workshops on the topic.

As a first step, the group recommended modernizing ground-based space observatories by replacing photographic methods of detection with electronic imaging, computers and software. Further down the road are decisions on issues such as the type of computer and networking technology that would be needed.

Most observatories today, Rabe said, record images of the sky on photographic plates, which then must be manually measured to determine the trajectory and orbits of objects.

But an electronic imaging system, known as Charged Coupled Device (CCD), would permit computerized measurements.

Tony Gehrels, a professor at The Lunar and Planetary Laboratory at the University of Arizona, pioneered the use of CCDs for this purpose back in 1983 under a NASA grant.

"We find 250 moving objects per night," said Gehrels, adding that most of these are an asteroid belt. Each month the system also spies several fast-moving objects closer to the Earth.

Orbit action

After tracking these objects for a period of weeks, months and years, Gehrels can create an orbit path. Computers can project whether this path will eventually intersect Earth's orbit.

The data from the university's telescope atop Kitt Peak is sent through a massive CCD with 2,048 lines, each containing 2,048 pixels. The sky data is then passed to a San Microsystems, Inc. workstation, which does real-time calculations to detect the moving ob-

jects against the backdrop of stars.

Large asteroids are thought to connect with Earth about every 300,000 to 1 million years.

The reality of the danger was underscored in 1989, when a half-mile-wide asteroid crossed Earth's orbit just six hours behind the planet.



James Gehr

Earth to laptop: Network access from the air

BY ELLIS BOOKER
CW STAFF

OAKBROOK TERRACE, IL. — In the film 2001: A Space Odyssey, a space shuttle crewman communicates a movie dialogue on a small screen built into the seat in front of him.

Recently, the commercial airline industry flew closer to that future with the maiden voyage of FlightLink, an all-digital voice and data communications system that will soon allow airborne laptop users access to data networks on the ground.

Developed by In-Flight Phone Corp., FlightLink consists of the following three parts:

- A custom-built battery-powered server using an Intel Corp. 80386SX platform from Texas Microsystems, Inc.
- An air-to-ground subsystem for digital voice and data communications from Pacific Communications Sciences, Inc. in San Diego.
- Backlit LCD panels built into the back of every passenger seat.

In addition to the rectangular LCD screens, the seats will feature built-in telephone handsets that double as keyboards for the system.

US Air said it plans to outfit 10 Boeing 757s with the FlightLink system by the end of this year, and it will evaluate adding the system to the rest of its 444-plane fleet.

The airline said it will charge \$2 per

minute for telephone calls but will not charge for data services such as stock quotes and on-board computer games during the evaluation period. Besides placing telephone calls, in the future fliers will be able to receive e-mail, view airport maps and even shop from their seats.

But by far the best news for frequent fliers with laptops are plans this summer to provide a serial port that accepts input from portable computers and fax machines at speeds of up to 9.6K bps/sec.

"One of the complaints many laptop users have is once they leave the ground they feel somewhat cut off," said Aaron Goldberg, senior vice president at International Data Corp. in Framingham, Mass.

FlightLink is the brainchild of In-Flight President John D. Goeken, a founder of both MCI Communications Corp. and Airfone, Inc.

Airfone in 1989 provided air-to-ground telephone service for 11 U.S. airlines and Air Canada. Airfone's all-digital voice and data system, dubbed Genstar, was announced last September and is scheduled for rollout in the first quarter of 1993.



With FlightLink, airborne passengers can receive data from earthbound services.

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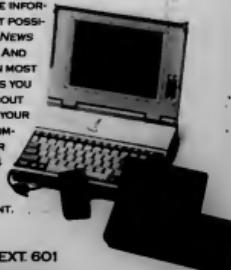
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EDITORIAL

What IS is

Forget about the sky-high turnover among the senior-most IS managers for a moment and consider this point: This is the age of the re-empowerment of IS, and, as such, it is the most potentially rewarding time ever to be in IS management.

That said, I for one am confused. Lately there's been an ardent attempt in some of my favorite trade publications to rename members of the IS community, or at least to split the community into the camps of "old" and "new" IS. This effort is reminiscent of the infamous "Coke, Coke Classic, double double decaf Coke with a twist" campaign.

The goal is to somehow magically transform PC publications, which have historically treated IS with utter disdain, into IS advocates — or should I say, "new IS" advocates. Along the way they hope to trash the reputation and standing of an important person — you.

That's right, you're the old fog (average age of a *Computerworld* subscriber is 40, right on the button) who stands in the way of progress at your site. You're the person who tried to say "slow down" to the millions upon millions of PCs that found their way into corporations in the 1980s and that now have to be replaced because they can't communicate with one another. You're the immovable stump who insists on promulgating internal network standards so users can, in fact, access data in minis and mainframes. You're the Luddite who insists on a calculated approach to acquiring new technology. You're the killjoy who pollutes those great downsizing plans with dumb questions like, "Who's going to manage the LAN? Do you know how much it will cost? What will be done about data security?"

You. You're "old IS."

The biggest impediment by far to the acquisition of information technology today is the growing belief among non-IS executives that there's been little correlation between technology outlays and increases in white collar productivity. You "old IS" types have kept your legacy systems up and crunching 99.5% of the time and better. Meanwhile, the tens of millions of MIPS sitting on PCs — the PCs often brought in by the "new IS" — have spent the overwhelming majority of their time idle, their users often processing no better memos or reports but simply longer ones, more often.

So today there is a widely growing recognition that the willy-nilly purchase of whatever-the-hell is the latest and greatest technology must be reined in. Each purchase must become, to steal a line from John Donne, "a piece of the continent, a part the main." That is, an integral part of a *system*. That integration job best falls to the group with a legacy of building reliable systems for three decades: the IS group. Old, new, modern, New Age. It doesn't matter. You know who you are.

Bill Laberis

Bill Laberis, *Editor in chief*



LETTERS TO THE EDITOR

Pizza chain likes Informix tools

I recently picked up your Buyers' Scorecard on midrange relational database systems [CW, May 4] and to my surprise found Informix ranked last in a number of categories.

Domino's has used Informix products for more than five years, and they have always provided exceptional performance and support.

In fact, we recently completed a pizza store information management system that was developed with Informix tools and that uses the Informix database engine.

We are in the process of rolling that application out to

all of our corporate stores (approximately 1,000), and so far it has proved to be one of the most successful software projects in Domino's history.

I would attribute a great deal of that success to the high quality of Informix's technical support.

I think all your readers should know that contrary to your survey report, a great number of Informix users are very happy with their product.

Ken Herr

*Domino's Pizza, Inc.
Ann Arbor, Mich.*

College's projects are collaborative efforts

I feel it is important to respond to "Only the occasional mouse ..." [CW, May 18]. The article states that I keep the primary

An atypical firm

In "Tiny dynamos advance the faith" [CW, May 11], I'd like to clarify a couple of important points regarding BSG.

First, our consulting and systems integration company name is BSG Consulting, Inc., not BSG Development, as was presented in the article. Second, if (as the article states), specialists like BSG typically have fewer than 20 employees, then BSG is very atypical. BSG has more than 150 employees, with headquarters in Houston and offices in Dallas and New York. And we're growing.

Steve Guengerich
*BSG Consulting, Inc.
Houston*

computer hardware "humming" that I am making plans for an upcoming supercomputer, and that I am now trying to establish a telecommunications link with the Commonwealth of Independent States.

I did not state that I was responsible for the above projects. I outlined that the University of Alaska was involved in securing a supercomputer and that the university is developing telecommunications links with sites in, at that time, the Soviet Far East.

I have full appreciation for the responsibility of others in these projects. I would never take credit for their efforts and hope that appropriate credit will be given.

David N. Leone
*Director
University of Alaska
Computer Network
Fairbanks, Alaska*

Select outsourcing vendors carefully

Regarding your editorial on "Reinforcements" [CW, March 30]: The concept of outsourcing is not new; just the names. It has been around for a long time, disguised as time sharing, service bureaus and facilities management. Only when the Kodak deal was consummated was the term outsourcing christened. I imagine it will be around in some form for many years to come.

I agree with your view that companies should look very carefully before committing to outsourcing, but common sense dictates that such magnitude is not without risks. To minimize those risks, the selection of the right vendor is most important. Not every vendor can be all things to all customers, and that is why the selection process is so critical.

It is my contention that a focused vendor evaluation project, matched with the customer's business objectives will greatly enhance the chances for success.

Rocco Luciano
*Manager, marketing and sales
Agway Data Services, Inc.
Syracuse, N.Y.*

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, *Editor in Chief*, Computerworld, P.O. Box 9171, 375 Cockshutt Road, Framingham, Mass. 01701. Fax number: (508) 875-8531. MCI Mail: COMPUTERWORLD. Please include a phone number for verification.

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Software patents: Boon or bane?

Where some see a worthwhile system in need of improvement, others see a quagmire

RICHARD STALLMAN

If you develop software — or even if you use software — software patents are a threat to your work.

Patents in software provide little benefit to society. Past experience shows that many new algorithms were published and many new features tried out in the absence of patents.

On the other hand, the burden that patents impose is immense. Every design decision now carries the risk of a suit for infringement. Most new techniques and features are off-limits for 17 years. And, as Bank of America recently learned, even the users of popular software packages can be sued.

Initially, people's attention is often drawn to the absurd patents — ones granted for techniques that are already widely known, such as "natural order recalculation" in spreadsheets. By focusing on these extremes, some people convince themselves that the patent system is basically correct and only needs "reform" to carry out its own rules properly. But how much good would this do? Let's consider an example.

In April 1991, Australian software developer Ross Williams began publishing a series of data compression programs using new algorithms of his own devising. Their superior speed and compression quality soon attracted users. The following September, use of these programs in the U.S. was halted by a newly issued patent, number 5,049,881. Dean Gibson and Mark Greybill had applied for the patent on June 18, 1990.

Under current patent rules, the validity of the patent depends on whether there is "prior art" — whether the basic idea was published before that date in 1990. Williams' publication came after that date, so it does not count. Gloria Drury, a student at the University of San Francisco, described a similar algorithm in 1986-89 in a class paper, but that didn't count either, because it wasn't published.

How far does it go? Between this and other data compression patents, it is now difficult to design any high-quality compression program that is unambiguously lawful — because it is not easy to tell just how for a given patent stretches. Reforms to make the patent system work "properly" would be no help here: This patent would still exist. There was no prior art, as the Patent and Trademark Office defines it. The algorithm is not close to obvious, as the patent system interprets the term. (Like most patents, it is neither revolutionary nor trivial, but somewhere in between.) The fault is in the rules themselves, not in their execution.

In the U.S. legal system, patents are intended as a bargain between society and individuals. Society is supposed to gain through the disclosure of techniques that would otherwise never be available. It is clear that society has gained nothing by issuing patent number 5,049,881. Under current rules, our ability to use techniques depends on whether anyone happened to publish the same idea before. More fundamentally, it depends on when various people happened to have the idea. That is to say, it depends on luck.

Teaching the patent office to look at more prior art might prevent some innocuous mistakes. It will not cure the greatest problem, which is the existence of even one wrinkle in the use of computers.

This will take time and expense. Even the most innovative program uses dozens of known techniques, and each is likely to fall within it is less than two decades old. If we are unlucky even half the time, few programs will escape infringing a large number of patents. Navigating this minefield will be harder than writing software.

A reform substantial enough to solve this problem would have to eliminate nearly all software patents. Since the problem is grave, we should not wait to decide which handful — if any — do benefit society. We should abolish them all without delay and leave the tuning for later.

Stallman, inventor of the Emacs editor, is a member of the League for Programming Freedom, which has its offices at 1 Kendall Square, No. 140, P.O. Box 9171, Cambridge, Mass. 02139.

PHILIP J. McCABE

Since the beginning of the U.S. patent system, inventors in many fields have sought patent protection for their original ideas, thereby risking time to establish their inventions in the marketplace. Although some contend that computer software is a special case and should be placed outside the patent system, developers of software programs also require and deserve the kind of protection that patents can offer.

Developing software requires creativity and enormous time from very skilled individuals. Even after development, the design may need extensive testing to debug it. Still later, substantial programming effort may be required for customer support, upgrades and adaptation to other hardware environments. By awarding exclusivity for a limited time to successful inventors, the U.S. patent system encourages the investment needed to develop promising new software products. A start-up company that has obtained patent protection on an innovative system is in a far better position to attract resources from investors than a company without protection.

Some of the objections to so-called "software patents" center on the idea that such patents will allow exclusive rights in field of feature or the mathematical execution of these laws. However, the courts have held that laws of nature and mathematical operations (such as Einstein's famous $E=mc^2$) are not the proper subject matter of patents. A patentable invention must relate to a real-world product or process, not merely a mathematical formula.

Some feel the availability of other forms of protection, such as copyright, provides a basis for refusing patent protection to software-related inventions. However, copyright only serves to protect the expression of an idea, not the idea itself. For example, if I describe a new industrial process in an article, anyone can duplicate my process without infringing my copyright in the article. The expression/idea is harder to draw in the computer software area, but the fact remains that patent protection is broader in key respects than copyright protection.

Software patents keep alive open source

Concerns have also been expressed about a myriad of patents blocking the marketing of new software, but there are safeguards against this possibility. First, one standard for patentability requires that an invention not be obvious to a worker of ordinary skill in the field. Thus, only truly innovative new software programs will be eligible for patent protection.

Second, the patent owner facing a clock ticking toward the expiration date of the patent may well want to grant licenses under the patent. Finally, if the patent owner will not license, a software program can be created that "designs around" the claims of the patent and avoids infringement.

Other criticisms of software patents relate to administrative problems, such as delays in examining and issuing patents, difficulties in searching the files of the Patent and Trademark Office (PTO) for software-related "prior art," and the possibility of error in granting patents. The PTO has sought industry recommendations on revisions to its examination procedures, and it is addressing known problems by hiring more patent examiners in this area and reorganizing part of its prior art classification scheme. Each day, the PTO becomes better equipped to deal with the problems of assessing new software — just as it has adjusted over the years to numerous new examination challenges in other arts.

The patent system is not perfect, nor is it perfectly suited to protect inventions relating to computer software. The patent laws do, however, constitute a workable means of encouraging technological innovation, and computer software should not be denied the benefits of this proven form of intellectual property protection.

McCabe is a partner in the Washington office of law firm Karpas & Karpas, Inc., specializing in protecting computer-related technology and other intellectual property.



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DESKTOP COMPUTING

PCs AND SOFTWARE • WORKSTATIONS

IBM edges into search for next computer generation

BY MICHAEL FITZGERALD
CW STAFF

NEW YORK — IBM recently outlined a broad-based future product plan that both impressed analysts and left them skeptical. IBM's scope pleased analysts, but its vision of a radically different computing paradigm raised questions as to how it would happen.

IBM executives outlined a two-year product cycle that, on the hardware side, ranged from a family of handheld devices to high-end "video" file servers that handle multimedia applications over a wide-area network.

"Many people won't recognize it is a computer they're buying," James A. Cannavino, general manager of the IBM Personal Systems Division, said of some of IBM's upcoming systems.

Though Cannavino and the

other executives offered few specifics, handheld personal computers could in fact seem more like consumer electronics products. Cannavino also pointed to a broad range of hardware and software alliances that will create new types of products.

He pointed to reduced travel needs through the use of videoconferencing tools, for instance, and advances in portable computing and communications that might allow companies to move away from the traditional office environment entirely.

He said the company invested heavily in improving new technologies and saw communications devices and object-oriented software as key initiatives.

IBM will also work to develop new server environments that can handle much more data than today's can. The company said it sees Notes servers, dedicated to handling communications runs over Lotus Development Corp.'s Notes package, that will allow users to build intranets networks around so-called flat databases with easy access to unstructured data.

This could make for an envi-

Looking ahead
(IBM's Personal Systems Division's strategy for the next 18 to 24 months is as follows:

- **Servers:** Notes-specific application server to act as a "fat" database.
- **Video server** — designed with improved bandwidth and connection to run multimedia applications — will use data and video transmission lines or through infrared and RF transmissions. (These video servers will fall into a category IBM calls "personal" servers, the size of a stereo component, which individuals will be able to use.)
- **Tango** voice recognition product, designed for use with PCs.
- **Portable:**
 - A family of handheld Personal Digital Assistants that communicate through wireless technology.
 - PCMCIA-compatible Token Ring adapter card.
 - PCMCIA-compatible 1.8-in., 40M-byte hard drive.



CW Chart: JESSIE GOMBER

Cannavino said IBM envisions technology being used in such a way as to "in some cases ... make obsolete the way we've done things before."

This could make for an envi-

Continued on page 38

Borland cites speed gain in Paradox 4.0 offering

BY MARK HALPERIN
CW STAFF

SCOTTS VALLEY, Calif. —

The personal computer world may be awaiting Borland International, Inc.'s Paradox database program for Microsoft Corp.'s Windows, but it will have to wait for an upgraded version of Paradox for DOS.

Borland yesterday was scheduled to introduce Paradox 4.0, a database program that the company said runs 10 times faster than Paradox 3.5. Unlike Version 3.5, Paradox 4.0 includes what Borland called a Windows-like interface, although the interface is character-based.

The company also introduced a Novell, Inc. NetWare SQL Server version of its Paradox SQL Link, which ties Paradox into Novell's back-end SQL data-base program.

Borland also markets the product for use with SQL Servers from Microsoft, Sybase, Inc., IBM and Oracle Corp.

Although industry attention has focused on Borland's forthcoming Paradox for Windows, one DOS user said last week that Paradox 4.0 is just as welcome a development. Brian Smith, president of Information Center Associates, a Los Angeles-based Paradox user and Paradox application development house, said

Version 4.0 includes unlimited field lengths that mark a significant improvement over Version 3.5's 255-character limitation. "For DOS customers who need to get day-to-day work done, Paradox 4.0 is going to be just as big as Paradox for Windows," he said.

Test results due

A Borland spokeswoman said the company will release benchmark figures comparing Paradox 4.0 to 3.5 and other database programs this week.

Paradox 4.0 is scheduled to be available this summer and is now in its final beta-testing stage, the company said. Borland will ship Version 4.0 before it ships Paradox for Windows, the spokeswoman said.

Borland set Version 4.0 pricing at the same level as 3.5 — \$79.95. To discourage users from waiting for Paradox for Windows, Borland is offering discounts on the regular \$199.95 upgrade. Depending on when customers bought earlier versions of Paradox and when they upgrade, they will be able to purchase an upgrade for either \$159.95 or \$179.95, Borland said. The company is offering a promotional version for \$99.95 for the first 90 days of availability. The regular suggested list price for the promotional version is \$250.

Computer graphics help carry physicians' message

Hospital's physicians, instructors use PC-based system to describe medical issues and procedures

BY CAROL HILDEBRAND
CW STAFF

PHOENIX — Driven by an increase in both federal right-to-life regulations and more knowledgeable patients, health care has been stepping up its efforts to educate the public and patients on health issues. At Phoenix Baptist Hospital and Medical Center, the staff had turned to computer graphics to help get the job done.

Ray Litman, coordinator of photography and audiovisual services at the hospital, said his department has been generating graphics for an increasing number of outreach programs, ranging from doctors' lectures on the acquired immune deficiency syndrome virus to newsletters and illustrated lectures sponsored by the hospital's community educational center.

Patients' rights
When the group started its effort about four years ago, Litman said, slide shows were more often seen at medical conventions than in meetings with patients. "Now," he said, "patients have to have more information by law than they did 10 years ago." He cited the "living will," which federal regulations mandate a patient be informed about and which the hospital has started giving seminars on.

The hospital employs about 900 physicians, including resi-

dents. While not all the doctors use the facility, Litman said a core of physicians has developed a series of presentations based on their work.

The staff creates the shows with the Harvard packages running on 30386DX-based personal computers. The PCs are linked directly with the visual system at the education center.

Litman can either transmit his slides over the network to the center or sit in his office and run the slides, which are then projected in the education center.

"We would like to think that one of our primary goals is education," Litman said, citing doctor/patient discussions as an area in which he and his

staff of three can help.

For example, a doctor sitting down with a patient before an angioplasty to explain the procedure and field questions can either use a video or slide presentation. Litman said graphics have an advantage over photographs, which tend to hit a little close to home for patients who are facing the same proce-

dure depicted in the photos. "A drawing can be less threatening," he said.

Better angles

A second advantage is the fact that graphics can depict views that photographs cannot. For example, a cutaway side view of the heart and attendant arteries is useful in an angioplasty, a procedure in which a small balloon is inflated in an artery to push blockages to the sides of the artery.

Litman said that although he produces slides for a majority of his lectures, the doctors are just beginning to play around with the Harvard packages as a video alternative. After creating a slide show, they can play the show back to a videotape machine.

"Now, when the doctor walks out of the office, let's get a VCR tape instead of a slide carousel and slides," Litman said. The staff is still working on finding inexpensive video boards with the resolution quality they need.



Computer graphics help staff at Phoenix Baptist Hospital explain the AIDS-causing HIV virus

WINDOWS VIEW

Jesse Berst

What's a Win32S, anyway?



Microsoft spews out Windows code names at an alarming rate. It's not always easy to keep things straight among Windows 3.1, Windows New Technology, Win32, Win32S, Windows 4.0, Windows for Workgroups and all the other variations on the Windows theme.

A few months back I took a look at Windows NT, Microsoft's brand-new 32-bit operating system. NT holds a lot of interest for IS shops that are seriously investigating tightening. It will have the robustness, protection and security they need to build mission-critical client/server applications.

While you're waiting for NT, currently promised for year's end, you can get started building 32-bit applications. And you'll be able to run those applications either on NT (when it appears) or on Windows 3.1. The secret is in something called Win32S, which is a limited version of the Win32 application programming interface.

Let me stop here long enough to emphasize that I am not trying to get into the political squabble of OS/2 vs. Windows NT. OS/2 offers 32-bitness right now, as I've discussed in a previous column. All I want to do here is alert you to a new development and its implications for IS departments. If you have made a commitment to Windows and you are also interested in 32-bit power, Win32S is something you should know about.

All in the family

To understand Win32S, you first need to get a handle on its big brother, the Win32 API. Win32 is the API for Windows NT. As such, it provides true 32-bit operation, flat memory addressing, multithreading, true protected operation and robust, system-level security, as well as a program-wide exception handler which frees developers from the need to examine the return values for each and every system function. Instead, they can deal with errors in a structured, "centralized" fashion. The primary design goal of Win32 was easy migration from Windows 3.1. In fact, Win32 is really just a superset of the 3.1 API with widened parameters.

Win32S, as a partial implementation of Win32, allows a 32-bit program to run with Windows 3.1, even though Windows 3.1 is essentially a 16-bit operating system. Win32S is not part of the shipping Windows 3.1. It works as a free runtime element that goes with the application, such as the Visual Basic runtime.

As you might imagine, Win32S can't provide all the benefits of its big brother. Some things just aren't possible with DOS as the underlying system. (That's why Windows NT is under construction.) In particular, Win32S can't handle the robustness features and other high-end robustness features.

So why would you want to consider Win32S? Quite frankly, some of its benefits are more important to commercial

developers. It lessens the risk of developing 32-bit applications because, with only slight modifications, those same applications can be sold to the installed base of Windows 3.1 users.

But Win32S also promises some advantages to corporate programmers. First, it lets them get started right now upgrading their Windows applications to get the power, speed and simplicity of 32-bitness. Second, it lets them create a single binary that will run either on Windows 3.1 or on Windows NT.

What happens if a program asks for one of the new Win32 functions that Win32S doesn't support? When Win32S encounters an unsupported function, it returns an error code. It's up to the programmer to figure out how to handle those error

returns. It could be something as simple as a dialog box that says, "That feature not supported on this version."

But in many cases, the error handling will have to be more sophisticated to cope with a situation where certain features may or may not be available, depending on which version of Windows is running.

Won't this error handling necessitate a lot of extra code? Not according to Alastair Banks at Microsoft's Developer Relations Group, who claims that, "In the beginning, most users won't use the advanced APIs that would return error codes. Most people will go 32-bit without extra APIs or extra code to start with," he said. "And then just select the few new APIs that could really make a difference when running on Windows NT."

"If the app never tries to use a new API," he continued, "then there's no extra code. If it tries to use a new API on Windows 3.1, then of course it must catch the error code and act accordingly. The extra error handling code isn't significant because the 'down-level' behavior is already coded."

If you've already gone through the pain of moving traditional programmers to the Windows GUI, then moving up to 32-bitness may be your next big step. Win32S may make that step a little smaller and a little safer.

Berst is the publisher of Redmond, Wash.-based "Windows Watcher" newsletter, a monthly briefing service for software executives and corporate technology managers.



RISC System/6000

Multimedia object software released

Lenel Systems' MediaOrganizer arranges multimedia data in many different formats

BY CHRISTOPHER LINDQUIST
CW STAFF

Databases are not just storing text and numbers anymore. Images are becoming common, and sound and video are not far off.

However, standard database management systems were not designed to deal with such new data formats. That is why Parsifal, N.Y.-based Lenel Systems International, Inc. created the MediaOrganizer multimedia object manage-

ment software.

MediaOrganizer runs under Microsoft Corp.'s Windows and allows users to organize, index and retrieve multimedia data in text, still image, animation, digital and analog audio and full-motion video formats. Images can be displayed in multiple scalable windows on a single screen.

Users can name multimedia "objects" and insert descriptions that can be used for later retrieval. Searches can be performed using several methods, including Boolean, wild card and synonyms.

The MediaOrganizer uses a point-and-click interface, and no programming is required. A report generator that can create electronic or printed reports is also included.

MediaOrganizer supports a variety of multimedia peripherals including Sony Corp.'s Dvox 8mm computer-controlled video player/recorder and Creative Labs, Inc.'s Soundblaster audio card.

MediaOrganizer's list price is \$795 for each user. Multiuser and network licenses are also available.

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Windows support in new MapInfo

MapInfo Corp., in Troy, N.Y., is bringing out MapInfo Version 2.0 desktop mapping software.

Designed for Microsoft Corp.'s Windows 3.1 environment, Version 2.0 geographically displays data from corporate databases and spreadsheets under Borland International, Inc.'s dBase, Lotus Development Corp.'s 1-2-3, Microsoft's Excel and delimited ASCII files. New features include buffering, which surrounds an uneven line or area for a specified distance, geographic search queries and dynamic map projections.

For graphics presentations, the product offers more than 100 line styles and fill patterns, and users can choose from a palette of more than 16 million colors. A built-in page layout manager and arrangement tools, charts and text for one or more pages, and TrueType fonts allow for rotation of text labels to follow streets and other angles.

The company also introduced the MapBasic Development Environment, which was designed to help corporate developers customize desktop mapping applications. MapBasic costs \$795.

MapInfo Version 2.0 costs \$995. Shipment is scheduled for this month.

LISA DAVIDSON

IN BRIEF

Relief offered to riot victims

■ SourceMate Information Systems, Inc., plans to donate its accounting software to small and medium-size businesses that suffered damages or losses during the recent riots in South Central Los Angeles.

The offer expires at the end of November. Companies wanting to take advantage of it must meet specific requirements to receive the free software.

■ Verity, Inc. licensed its text search and retrieval technology to MicroFront Systems, Inc., which will use the technology as part of the human resources software it sells.

Verity is also working with Lotus Development Corp., and its technology will show up in the next release of Lotus' Notes, which is expected at year's end.

■ Gupta Technologies, Inc., made the announcement that its SQLServer clocked in at 102 transactions per second in a Transaction Processing Council "B" benchmark test.

The B benchmark tests the throughput as measured in transactions per second, subject to real-time constraints and the associated costs per transaction per second.

In this case, the cost was \$1,380 per transaction per second.

IBM searches for next generation

CONTINUED FROM PAGE 35

moment where a user would be able to enter a name and receive a list of all documents in the database where that name occurs and the context in which it is used, for instance.

These types of systems will be followed to market by vastly more powerful video servers, which will have full multimedia (data and motion video) capabilities and will connect wide-area networks.

IBM will also push infrared and cellular, or radio-frequency, communications as a way to transmit data as well as video, prompting some analysts to say it is trying

to circumvent telephone companies.

Canservino said IBM's server vision might culminate in a "personal" server. This might be the size of a common stereo component and yet be powerful enough to run motion video applications easily; it could also be mobile.

IBM also intends to build, or perhaps license, handheld personal digital assistants. Motorola, Inc. was cited as a business partner in this effort, which could produce a pen-based system that would be held in one hand and allow users to keep in contact with their offices.

Canservino said IBM sees communications speed and capabilities increasing as fast, or faster, than the rate of microprocessor development. Microprocessors double in speed roughly every 18 months.

"There's a paradigm shift coming in communications," he said.

Analysts pointed out that IBM would likely have company in its efforts, with some partners, such as Apple Computer, Inc., proving fierce competitors. Analysts said IBM had presented impressive ideas, although few observers were unqualified in their praise.

"They have lots of good ideas," said Dan Neess Jr., an analyst at Computer Intelligence in La Jolla, Calif. "The question is, how do they market them?"

Some analysts who attended the briefing expressed skepticism over IBM's plans. "They want us to be in hotrods, but we're not there yet," comments right now," said Gerald Michalaki, president at New Science Associates, Inc., a consultancy in Southport, Conn. At the same time, Michalaki added that he liked many of the elements of IBM's PC strategy and said, "I don't see anyone else going front to back like IBM."

Several products likely to appear before the end of 1992 are a 1.8-in. hard drive that can hold 40M bytes of data and a Token Ring network adapter that is roughly the size of a credit card. Both devices are compatible with the flash card standard established by the Personal Computer Memory Card International Association. A clock-doubler version of its 20-MHz 1486SLC chip was also on display.

Robert Carberry, assistant general manager of IBM's Entry Systems Division, said a voice-recognition project called Tambour is also moving toward the market. He also said the 8048 kHz/Micro Channel Architecture recently announced on the RISC System/6000 will appear in Personal System/2s in the future.

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Multi-Media Architecture Image Data Text	NO	NO	NO	NO	NO

Chart prepared by Comptron Systems, Inc. based on information from the four accounting software packages. The chart does not represent an endorsement of any product.

Opening new ports



Part of a series of
Windows 3.1 user
tips provided by
Microsoft Corp.
and based on ques-
tions commonly
asked of Microsoft
customer support
personnel.

Q Can I use the COM3 and COM4 ports within Windows 3.1?

A This is dependent on your hardware. Under protect-mode Windows 3.0, it was often possible to use COM3 and COM4 for your non-Windows applications, such as Terminal. This was a limitation of the COMDLR.DRV driver included with Windows 3.0. This driver always assumed IBM-standard default base I/O addresses and interrupt assignments for these ports. However, these "standard" settings are not industrywide and may not have been the ones used on your personal computer.

In Windows 3.1 you now have the capability to tell the COMDLR.DRV the correct base I/O address and the correct interrupt for each port. If your hardware will support such a configuration, you may be able to use COM3 and COM4 for your Windows applications, provided the following:

- You have correctly identified each port's settings in the Ports section of the Control Panel (use the Advanced Setting options).
- The ports I/O base addresses are correctly identified in the system BIOS table.

Serial ports that can share interrupt request lines are supported by drivers on Micro Channel Architecture and Extended Industry Standard Architecture computers. However, to use interrupt sharing serial ports on Industry Standard Architecture PCs, add the following line to the [386Enh] section of SYSTEM.INI: COMIRQSHARING=TRUE.

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dBase IV 1.5: Not quite the cat's pajamas

Borland's dBase IV Version 1.5

Reviews	Ease of use	Data integrity	Multisuser support	Performance	Application development	Documentation	Service and support	Value	Overall
PC Magazine 5/19/92	Good/best product	NC	NC	Poor	Slow index creation	NC	NC	Very good	Excellent support and forward compatibility
PC Week 4/6/92	QBE facility easier to use	NC	NC	Many areas not improved	Programmatic interface	NC	NC	WBI being current source better	Not superior, but forward compatibility
PCWorld 4/12	Powerful/multisuser support	Very difficult	NC	Improved	Programmatic interface	NC	NC	Good	Forward compatibility
Users									
Steve Hech, Borland International, Inc.	■	■	■	■	■	■	■	■	Excellent, efficient
Terry McMillan, Microsoft Channel Group	■	■	NC	■	■	■	■	■	Improved speed and indexing
Michael Morris, Silverspoon Automobile	■	■	■	■	■	■	■	■	Multi-tasking, easy-to-use
Terry Martin, Varian Associates	■	■	■	■	■	■	■	■	Can handle other applications
Analysts									
Mark Gervais, Morgan, Keegan, Inc.	■	■	■	■	■	■	■	NC	Language is pretty
Steve Czerwinski, Computerworld Business Group	■	■	■	■	■	■	■	■	Multi-tasking appreciated

Key: ■ Very good ■ Good ■ Fair ■ Poor

Reviewer evaluations are excepts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone surveys.

Technology Analysis — A roundup of expert opinions about new products. Summary written by new products writer Derek Sleator.

Dbase IV Version 1.5 is the first upgrade to dBase since Borland International, Inc. acquired it last year. Reviewers agreed that the new version is solid and includes important new features, such as mouse support and a more open architecture for application developers. It is also significant in that it demonstrates Borland's commitment to the most common personal computer-based relational database.

However, reviewers also noted the competitive absence of the object-oriented technology prevalent in Borland's other products. With a version for Microsoft Corp.'s Windows platform waiting in the wings, users may choose to hold out for now.

Ease of use: Users will welcome the addition of mouse support, although PC World called dBase's implementation inconsistent. For example, a double click may yield two kinds of menu actions, depending on what part of the program a user is working in. Other enhancements include better control over the query-by-example (QBE) facility, which guides users through selecting the appropriate query commands.

The product provides more information about the data, such as the FOR and UNIQUE functions, which indicate whether an index was created using the FOR or UNIQUE commands. dBase users can also incorporate third-party programs into the Control Center, allowing them to substitute a preferred text editor or other utility in



place of dBase's offering.

Data integrity: Reviewers reported no significant bugs that could cause loss or corruption of data. The glitches found in Version 1.0 have been cleaned up, according to PC World.

Multisuser support: Distributing an application developed in dBase IV requires the \$250 runtime package. The product handles standard explicit and implicit record-locking.

Performance: Reviewers found the program's speed to be noticeably better than in Version 1.0. PC Week attributed this in part to improved indexing procedures. A new SET KEY TO command lets users filter data based on an index expression. Queries can also be automatically optimized with the Index Query Optimization function, which has the ability to create a temporary index if one is needed. DBase IV Version 1.5 can reuse in-

dexes and gives the user control of when indexes are to be updated.

The program's speed has not improved in most functions that do not involve indexing, according to PC Magazine. dBase still lags behind some of its competitors in the Xbase market in terms of raw speed.

Application development: Developers can now open up to 40 work areas, a much-needed improvement over the previous limit of 10, reviewers said. Conditional compiling is also possible. A STYPROC function lets developers define high-level procedures that take precedence over all functions, except certain editor commands. Users can also use the SET LIBRARY TO command to specify the order in which procedure libraries are searched. These enhancements are alternatives to the SET PROCEDURE TO method of storing common procedures, PC Magazine said.

Values: The database costs \$795; upgrades from previous versions cost \$99. In the final analysis, reviewers said users will be pleased by what is there but may also be puzzled by what is not. The new version adds useful features without sacrificing the technologies. Borland will eventually need to add to dBase to keep up with its competitors.



dBase IV Version 1.5 offers mouse support and a more open environment for developers but lacks object-oriented technology

Borland responds

Vince Menaldi, product manager

Ease of use: The mouse support will be consistent with any application developed under dBase IV or III Plus. Then it's also consistent in the way the mouse behaves in the tools, the QBE and throughout the different work surfaces. It's less consistent in the area of the quick key shortcuts. So it's 95% consistent, and I think the critics are overreacting to that other 5%. In the future, you'll see some changes in the user interface in general.

Multisuser support: We already support most of the network issues, and we're evaluating additional support. **Performance:** There are several key areas for the future: the language, the performance as well as injecting object-oriented technology into dBase. The development of this new version started at Ashton-Tate. Then we made additional enhancements we thought were needed. Borland also did the final quality checking. We're very committed to continuing to support dBase as well as under Windows.

COMING UP

On June 15, Technology Analysis looks at Pilot Executive Software's Lightspeed for Windows and Channel Computing, Inc.'s Forest and Trees.

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WORKGROUP COMPUTING

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Sun's new line wins user favor

Users pleased with the balance and design of recent batch of workstations

BY MARYFRAN JOHNSON
CW STAFF

With the recent introduction of the SPARCstation 10 line, Sun Microsystems, Inc. fired off the first flare in what is expected to be an extended fireworks show of new hardware and software.

Sun is recasting its product line in the image of a new generation of chips, starting with the SuperSPARC Viking from Texas Instruments, Inc.

Analysts are pegging late fall for Sun's next round of hardware, this time based on TI's low-end Transputer chip for Scalable Processor Architecture

(SPARC)-based laptops, portables and, possibly, palmtop computers.

While critics find fault with the months of delay in bringing the SuperSPARC to market — and the lack of a 50-MHz CPU version until late this year — Sun users seem pleased with the balance and design of this latest crop of workstations.

"If you just go by the numbers, Sun won't win," said Darren Curtis, a systems manager at Battelle, Pacific Northwest Laboratory in Richland, Wash. "But they have consistently stuck with the philosophy of doubling performance with every new re-

vision of the hardware and not raising prices. IBM and Hewlett-Packard don't do that."

Sun's dominant theme in this latest announcement — customer investment protection — is eerily reminiscent of Digital Equipment Corp.'s pitch for its VAX/VMS line.

Yet the notion still has a convincing appeal to users, analysts said. "Sun is trying to give confidence that what people buy today will require a lower investment in the future," said Jeffrey Cain, an analyst at Montgomery Securities in San Francisco. The idea is doing that through a module design that allows upgrading via plug-in modules to better CPU performance, disk storage capacity and memory.

Sun is also prepping for the future by outfitting its SPARCstations with multimedia gadgetry such as compact disc-quality 16-bit audio and a microphone as a standard feature.

"Multimedia is probably most important to people developing those kind of applications now," said Curtis, who helps manage Battelle's 200 Suns. "I'm anticipating that is a few years. Sun will have multimedia capabilities on their low-end workstations." At that point, you can set up a \$6,000 phone/workstation/tele-conferencing station.

The hardware innovations in the SPARCstation 10 lineup do not stop there. The machines are the fastest CPU on the market. Rather, they center on features such as a built-in Integrated Services Digital Network

(ISDN) connector or "snap-in" CPUs to grow uniprocessor systems to multiprocessor desktops by early next year.

"I think Sun is showing some very good direction and foresight," said Barbara Kotick, MIS director at Consumer Health Services, Inc. in Boulder, Colo. "But there is still a lot to be learned about making ISDN work in a commercial environment." She and other commercial users seemed most interest-

ment and double the throughput of the Network File System.

SPARCstation/Server 10's also include the following:

• Multimedia expansion with plug-in processor modules, available later this year for a two-processor system and early next year for the four-way model.

• Memory improvements through the largest on-chip caches available currently on reduced instruction set computing (RISC) chips. The SPARCsta-

Product	Model 30	Model 40	Model 50	Model 60
Processor*	44.2	55.6	108	218
Processor**	82.9	64.7	108	218
Clock speed	30 MHz	40 MHz	45 MHz	45 MHz
Memory	32M to 512M bytes	32M to 512M bytes	64M to 1G bytes	64M to 1G bytes
Data capacity	424M to 2BG bytes (SCSI)	424M to 2BG bytes (SCSI)	1G to 2BG bytes (SCSI)	1G to 2BG bytes (SCSI)
Price	\$16,495	\$24,995	\$38,995	\$57,995

CW Chart: Tom Hunsaker

The big transition

The most crucial test point for Sun's success lies ahead with the transition from the current Solaris 1.0 and 1.1 operating systems to Solaris 2.0, which will be introduced this month.

Based on Unix System Laboratories, Inc.'s Unix System V.4, Solaris 2.0 will offer symmetric multiprocessing support, increased network security and simpler system administration. By early 1993, all new SPARC systems will run Solaris 2.0 and its successors — exclusively.

"This will be the biggest software product transition in Sun's history, and they're doing it slow and easy," said David Wu, an analyst at Salomon Brothers, Inc. in New York. "I don't blame them for moving slow. If they screw it up, it would be a big screw-up."

This is precisely why competitive customers such as Comshare, Inc., and MDS Corp. now Barbara Kotick are running a wait-and-see period for the Solaris 2.0 transition. "We're very cautious when it comes to upgrades. No way will we be the first on the block with a mission-critical application. Until our database vendor, [Sybase, Inc.], confirms that everything behaves well, we won't leave."

ed in the advances Sun is making in the server arena, where Sun has shipped 5,200 of its new SPARCserver 600MP systems in the past six months.

With a \$6,000 board-swapping chip to the SuperSPARC chip, customers with SPARCserver 600MPs can easily double their processing power. The same swap for users with older SPARCserver 300 or 400 models would triple database perfor-

mance and double the throughput of the Network File System.

SPARCstation/Server 10's also include the following:

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variety of applications that facilitate information sharing can be quickly developed and deployed to multiple users at multiple sites. Regardless of what networks, applications and operating systems are in place.

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Bob Kantor
Ciba-Geigy Corporation

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Observers wary of IBM FDDI 'alliance'

BY JOANIE M. WEKLER
CW STAFF

IBM and 3Com Corp.'s recent rollouts of agreeably priced Fiber Distributed Data Interface (FDDI) products at the Interop '92 Spring show in Washington, D.C., carry ramifications for industrywide standards and indicate different vendor attitudes toward would-be FDDI users.

The two firms introduced network connections at new price points for both fiber and Type 1 shielded twisted-pair media running FDDI's 100M bit/sec. speeds. The \$1,300 and \$1,600 per-con-

nection copper products conform to an unofficial FDDI standard for Type 1 cabling that is backed by IBM and 10 other industry players.

Despite its copper product's compliance to the group's technology, 3Com has not officially joined the IBM-led alliance, as it continues to back formal standards committee work toward a technique that supports both shielded and unshielded copper.

While observers support the implementors' alliance for product interoperability, some frown on what they view as an IBM attempt to monopolize the stan-

dards process — in what might not be the best interests of the industry.

IBM acknowledged that it is focusing on its large, Type 1 installed base, which it estimates consists of about 17 million buildings worldwide. However, Category 5 datagrade unshielded twisted pair is currently outshpping Type 1 by about 2 to 1, according to Forrester Research, Inc. in Cambridge, Mass., which expects that ratio to jump to more than 3 to 1 in 1994 and more than 4 to 1 in 1995.

In addition, IBM customers "are not the ones investing in FDDI," said Paul Callahan, senior analyst at Forrester. He

said this is because IBM has spent years drilling the concept of Token Ring networking into the heads of its users.

Observers said they fear the IBM-headed alliance could interrupt the standards committee's work should it decide to reexamine the already once-rejected notion of defining a shielded-only scheme. The committee decided instead to construct a dual standard covering both Type 1 and datagrade Category 5 unshielded twisted pair to accommodate the growth of Category 5.

"The question is, what is the challenge for the customer if they do shielded FDDI now and then the other standard kicks in?" said Tom Wood, senior industry analyst at Business Research Group, a consultancy in Newton, Mass.

"We have been sensitive not to use the standards committee improperly," said Larry Nicholson, IBM advisory engineer for FDDI development and a member of the committee. "However, we have made

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THE QUESTION IS, what is the challenge for the customer if they do shielded FDDI now and then the other standard kicks in?"

TOM WOOD
BUSINESS RESEARCH GROUP

this technology available to them."

Unlike 3Com's products, IBM's copper links sport no scrambling technique to guard against peaks of disruptive electromagnetic interference. While this feature is unneeded in the high-quality Type 1 cable, its shortcomings will likely make shielded, standard, acknowledge Stuart B. Sager, manager of local-area network planning and support at IBM.

"I have a problem with this," said Charlie Robbins, director of communications research at Aberdeen Group, a Boston-based consultancy. "IBM users are business people [who think about product migration]. They don't know what they might inherit cabling-wise through acquisition or other circumstances. IBM has basically said, 'Launch the torpedoes and let's force the unshielded standard to be competitive with us.'"

3Com's design sports the scrambling technique defined in one of two shielded/unshielded proposals now before the committee. The scrambler can be activated or deactivated, depending on what medium is used, explained George Prodan, 3Com's FDDI product manager, and will likely render 3Com boards compatible with the dual standard.

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makes little difference if the rest of the computer can't keep up.

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The faster CPU is our remarkable — and reassuring — new SuperSPARC™ chip. Reassuring, because SuperSPARC is binary compatible with previous generations of SPARC®. It runs the Solaris® operating environment, too, so you can use thousands of existing applications.

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Performance



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Though budgets have never been tighter, most workstations are still designed around the belief that you're willing to replace last year's computer just to work with a newer processor.

The SPARCstation 10 was designed around a different philosophy: Make the processor replaceable, not the workstation.

To that end, we put the processor on a small SPARC module that plugs into the motherboard. As faster chips become available, you can upgrade by pulling out the old card and plugging in a new one.

The rest of your investment — memory, storage, accelerators, everything — is left intact.



Plug-in
SPARC Modules

But don't feel you have to wait around for faster chips. You have the freedom to grow a SPARCstation 10 in plenty of ways right now.

You can start by plugging in a second SPARC module. Since this machine was engineered throughout for symmetric multiprocessing, a second module will nearly double

its processing power.

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There are ports for both parallel and serial devices; connections for thick, thin, or twisted-pair Ethernet; even ISDN connectors for networking over public telephone lines. All built in. Which leaves its four expansion slots available for other functions.

To sum up, we hope you like the way Sun's SPARCstation 10 looks on your desk.

Because it's going to be there quite a while.

The future is not an option.

As innovative as computer companies try to be, they usually can't keep up with what people like you are ready for.

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SQL Server slips Sybase into NetWare territory

BY JEAN S. BOZMAN

CW STAFF

SAN FRANCISCO — Sybase, Inc. both clarified its relationship with Microsoft Corp. and moved a step closer to Novell, Inc. recently by releasing a version of its SQL Server relational database for users of NetWare 3.1 local-area networks.

Up to now, Sybase's only offering for LANs was SQL Server for OS/2, which was designed by Sybase and sold by Microsoft.

Based on Release 4.2 of the Sybase engine, Sybase SQL Server for NetWare was created as a NetWare Loadable Module (NLM) and will function as an intermediary between personal computer-LANs and host databases, said Stewart Schuster, Sybase's vice president of marketing.

The total cost of installing and maintaining the Sybase NLM will be less than that of installing a stand-alone Sybase database server or a dedicated NetWare LAN, analysts said. "You can save money if you already have a Novell LAN," said Jim Daly, a database administrator at the U.S. House of Representatives



Novell's Schuster:

Company will truck

users' problems

in Washington, D.C.

"People want this [NLM] because it's cheaper for sites that already have a Novell infrastructure," said Donald Neilson, a software analyst at Gartner Group, Inc. in Stamford, Conn. The license's price is based on the number of users: \$2,000 for a single-user license, \$9,000 for

9 to 16 users and \$30,000 for more than 32 users.

Sybase will continue to work with Microsoft to develop competitive products for the OS/2 and Windows New Technology environments. Those products will be sold by Microsoft.

Microsoft spokesman noted that Sybase's NLM is optimized for the 32-bit NetWare network operating system, not for OS/2.

Some users said they believe the Sybase NLM will serve them well. Previously, they had to buy a separate LAN to host the Sybase relational database, then install Transaction Control Protocol/Internet Pro-

toocol (TCP/IP) links to connect the Sybase server to NetWare. "The NLM makes it pretty easy to put up the database on NetWare," Daly said.

Randy Corbett, a project engineer at Rockwell International Corp.'s Space Division in Downey, Calif., tested the Sybase NLM for four months. He used an Intel Corp. 80386-based PC with 16M bytes of random-access memory and 600M bytes of hard disk storage to support six end users.

"It's got faster processing than SQL Server for OS/2," Corbett said.

Powered by combo

Before this, he considered installing Sybase on the NetWare LAN and running Sybase's SQL Server for OS/2 with Novell's Reservoir or for OS/2. "But that [combination] wouldn't have been able to support as many users as the NLM version," he said.

Prior to the test, the Rockwell site had a Unix version of the Sybase server on a separate TCP/IP LAN.

The Sybase NLM will be sold through Sybase's current sales channels, excluding Microsoft, and supported by Sybase.

However, Jan Newman, executive vice president and general manager of Novell's NetWare Systems Group, said users will not have to determine whether problems are caused by the Sybase product or by NetWare. Novell will take responsibility for tracking users' operational problems through its Technical Support Alliance maintenance program.

Traders trim paper step

Smith Barney using client/server architecture

BY JEAN S. BOZMAN

CW STAFF

NEW YORK — Smith Barney is talking about putting a trader's workstation on the desk of every broker in its 96-office organization by 1994.

The investment subsidiary of Primerica Corp., formally known as Smith Barney, Harris Upham & Co., is using a client/server architecture to distribute the placement of buy or sell orders to the trader's desk in the past, clients wrote out paper tickets for key orders into a system based on an IBM 3090 mainframe. "Those paper tickets will be eliminated through a link between the RIS [Systemsframe] and the host," he said.

"We are building a system for the sales force," said Richard Wittenberg, a managing director at the firm that oversees Smith Barney's administrative services and telecommunications processing.

The current process of placing client orders is "very paper-intensive," Wittenberg said. "We are automating that process." There will be at least one RIS/6000 at each of the firm's branch offices in 30 states and at eight sites in Europe and Asia.

Nightly distribution
"We will take nightly extracts of [mainframe] account data, which we will distribute to the RIS/6000s for the Sybase database," Wittenberg said. Brokers

will be able to combine the customer account data with current stock exchange trading data. They can then view both types of data while talking with clients on the phone.

As planned, the traders would work at IBM Personal Systems/2 workstations, gathering client data and market data from RIS/6000 servers. Smith Barney recently bought 150 copies of Sybase, Inc.'s Sybase relational database management system for use on the new generation of workstations.

One RIS/6000 Model 320 H will support 48 workstations, but higher end RIS/6000s could support twice that amount, Wittenberg said. The servers will anchor IBM Token Ring local-area networks and connect with the mainframe via IBM's Systems Network Architecture.

Broker applications are being written using Jyse, Inc.'s PS/2 Model 35 workstations will use pop-up windows to overlay client information on a stock trading screen, for example. Brokers will also be able to toggle between two screens.

Originally, Smith Barney had planned to use IBM's OS/2 as a database server, but information systems managers here said they felt they would have had to use the top-of-the-line PS/2 Model 95 to host the applications. Smith Barney said it has 700,000 clients worldwide.

Beyond to ship Windows mail package

BY ROSEMARY HAMILTON

CW STAFF

Beyond, Inc. intends to ship a Microsoft Corp. Windows version of its rules-based electronic-mail package by mid-July, a company executive said recently.

The company, which has been marketing a DOS mail package since August 1991, is banking on a theory that some users want an E-mail package with smarts. So far, that theory is proving correct.

"The rules-based approach is exactly what we needed," said Robert Harkema, MIS manager at ClimaX Portable Machine Tools in Newbury, Ore. Harkema's firm is evaluating the Beyond Mail software.

Eugene Lee, Beyond's director of product planning, said the company has signed on users who "tend to be downsizing customers ... who have already built extensions to [host] mail systems and are accustomed to that. They can reproduce that environment with Beyond Mail."

Beyond Mail includes a num-

ber of functions to tailor a mail environment. It allows a user to set up a personal mail system by establishing rules for mail priorities. The system would then automatically sort incoming mail and filter out unnecessary items. Other functions allow a user to set up procedures for corresponding with co-workers. The system would automatically forward certain messages or launch a canned reply to other ones.

These advanced mail features have been presented by other E-mail packages, including Lotus Development Corp. But, as analysts point out, Beyond is selling these capabilities now.

"I think they've shown with the delivery of products to date that they really understand how to add value to [mail]," said David Whitton, program director of office information systems services at Gartner Group, Inc.

At Kemper Services Co., a division of Kemper Financial Services in Chicago, a prototype application is being built with Beyond Mail for Windows for the marketing group that supports mutual fund sales.

"We want to use Beyond Mail to create an electronic agent," said senior analyst David Markley. "What this will do is monitor the work flow and decide who should get what, and when managers should be sent and at what time responses are considered late."

The final approval for Beyond

Beyond," he added.

Climax is using Beyond Mail for DOS to set up a "closed loop communications" system, Harkema said. In other words, the goal is not to let messages fall through the proverbial cracks.

"In order to make our concept work, we needed a lot of rules for communicating electronically," Harkema said. "They only way to do that is to train people. But because Be-

ITHINK THEY'VE shown with the delivery of products to date that they really understand how to add value [to mail]," DAVID WHITTON, GARTNER GROUP

Mail rests on the prototype results. Markley said his staff will be moving to the design phase "within a month or two." While Markley said there were some management concerns about working with a new company, Beyond has "been nothing but great."

"We are aware that the market leaders will probably come out with something similar to

Beyond," he said. "But we could internalize the rules and make them invisible to the user."

With Beyond Mail, the company has set up a mail system that keeps mail senders informed on who received the message and who has not yet replied. The system notifies them when the particular mail process is complete.

On updates Status Mac

CAMBRIDGE, Mass. — On Technology, Inc. updated its Macintosh Mac recently, adding the ability to remotely update Apple Computer, Inc. Macintosh files and folders.

Status Mac 3.0, which is now shipping, enables network administrators to profile Adobe Systems, Inc. PostScript printers as well as individual Macintoshes. By profiling, or doing a remote inventory of a printer's fonts, drivers and other aspects, network managers can avoid walking around to perform such queries.

The same is true for the new remote update feature, which enables managers to remotely update or install software on each user's files and folders. Using store-and-forward technology, Status Mac can do the updating as soon as a Macintosh that is turned off is rebooted. The software lists for \$749 for 25 users and \$2,699 for a 100-user license.

JIM NASH

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Documentation	8.4	8.7	8.7	8.7
User friendliness	8.4	8.2	8.7	8.7
OS Compatibility	8.2	8.2	7.8	7.8
Product Support	8.1	8.8	8.0	8.0
Overall Product	8.7	8.2	7.8	8.0
Market Position	7.2	7.8	8.0	8.0
Position Reputations	8.0	8.1	8.4	8.7
Quality	8.1	8.4	8.7	8.7
Performance	8.0	7.8	8.1	8.0
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**Performance Index is the measured result relative to the slowest machine tested (a 286-based IBM PS/1 running Windows). For example, the Macintosh Quadra 950 is 9.7 times faster than the slowest machine tested.*

Ingram Performance Report by Ingram Laboratories, published 1992. *Software programs used in benchmark test were Microsoft® Word® 2.0, SuperCalc® 3.0, Wang® 2, PageMill™, Pagemaker™, PageMaster™, and Illustration™. Macintosh and the Apple logo are registered trademarks of Apple Computer, Inc. All other brand or product names indicated by ® or TM are registered trademarks of their respective companies.

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They loaded the computers with the most popular programs available for both Macintosh and Windows 3.0. Then measured the time it took each machine to perform real world functions like opening a file, scrolling, running a macro, performing calculations and so on.

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ENTERPRISE NETWORKING

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SNMP holds steady as network standard

BY ELISABETH HORWITT
CW STAFF

WASHINGTON, D.C. — A new of Simple Network Management Protocol (SNMP) announcements at the recent Interop '92 Spring conference reinforced SNMP's status as the dominant network management standard.

Out of 200 sites recently sur-

veyed by International Data Corp. in Framingham, Mass., 34% had implemented SNMP-based network management systems, and 51% said they had no formal strategy for implementing the Open Systems Interconnection (OSI) network management standard.

One major reason for user's current lack of enthusiasm for

OSI-based network management is the continuing shortage of commercial products supporting the standard, the report said.

One OSI-based network management platform did emerge at Interop: OS/Eye-Node from Digital Analysis Corp. and Data General Corp. However, the platform also supports SNMP.

In addition, OS/Eye-Node is said to use the Open Software Foundation's Motif as its graphical user interface and SQL as its database access protocol.

OS/Eye-Node features an auto-discovery tool that automatically creates a map of all de-

vices that currently reside on the network. The platform is said to manage remote systems and networks over X.25, Ethernet, Fiber Distributed Data Interface (FDDI) or Token Ring networks. The product is scheduled to ship this fall, running on DG's Avion or other Unix-based platforms.

Novell, Inc. announced that its LANIntern monitoring and protocol analysis system will now include the SNMP Remote Network Monitoring (Rmon) protocol. Rmon is a recently finalized standard that allows

Continued on page 54

Users pick up pieces to WAN puzzle

At Interop '92 Spring, WAN cost justification a concern for many users

BY JOANNE WICKLER
CW STAFF

Cost justification of wide-area networks was on the agenda and on users' minds at the recent Interop '92 Spring conference.

During conference session, users received the following advice from panelists:

"Re-evaluate what you're trying to get done [in your business] before replacing old protocols with systems that do them faster," said Ryan James, director of telecommunications research at Boston-based consultancy The Yankee Group.

James also advised users with T1 backbones to maintain them for the next two to four years



Primary Rate (1.5M bit/sec.) Integrated Services Digital Network (ISDN) becomes common in 1995 and broadband ISDN (speeds above 1.5M bit/sec.) kicks in the following year.

On frame-relay technology, James noted that "the flexibility of frame relay to dynamically ramp up or down in speed [to ac-

commodate bursts of traffic] can also it its Achilles' heel. During high-congestion periods, from one keyhole to the next, it's hard to guarantee a consistent grade of service to users."

User Ralph Sandridge, who is heading up a "cautious migration" to public frame-relay service to consolidate several parallel networks at Martin Marietta Co., told the group he is concerned about that very issue. To safeguard, he said, he is restricting the initial protocols allowed to traverse the frame-relay network. Transmission Control Protocol/Internet Protocol and Digital Equipment Corp.'s DECnet.

Sandridge said this restric-

tion is so he can keep his eye on congestion patterns before introducing Novell, Inc. IPX and Apple Computer, Inc. AppleTalk local-area network protocols, which he said have characteristics that make them more susceptible to LAN clogs.

Although no formal standards-based carrier announcements have been made, Howard Stern, director of market analysis for Spirent International, said users can start expecting switched virtual frame-relay circuit offerings in the second half of 1993. Unlike permanent circuits, available today, switched offerings do not require users to predefine communications end points, giving them a broader range of connectivity.

Soon said users can expect cell-based Asynchronous Transfer Mode availability at T3 (45M bit/sec.) speeds by mid-1994.

Users await NetView 2.3

BY ELISABETH HORWITT
CW STAFF

WHITE PLAINS, N.Y. — Users will have to wait until December to get their hands on IBM's NetView Version 2.3, the vendor announced recently. The product, introduced last fall without a delivery date, provides IBM with multiwindow monitoring capability on IBM's Graphics Monitor Facility.

Another key Version 2.3 feature is Resource Object Data Manager (RODM), an in-memory data store capability that is said to track the status of network devices in real time. This is a move will allow users to generate automated applications that, when alerted to a change in a device's status, can take prompt corrective action, IBM said.

This is unlike the older event-driven method of managing devices via NetView, which required an automated system that required "go back and check a static database or wait for a message before it can react," said Lynn Sobat, IBM's strategic planner for network management systems.

The right chemistry

Chemical Banking Corp., an early evaluator of NetView 2.3, sees the new version as being key to its current data center re-engineering and consolidation project, according to Joseph Pecchio, a senior vice president of the bank's information and technology management group.

RODM is now an official element of IBM's SystemView, enabling the platform to perform real-time monitoring of data center systems' status, said Lynn Wilcock, IBM's NetView product manager.

NetView 2.3 will also enable users to monitor and manage non-Systems Network Architecture devices from the Graphics Monitor Facility — OS/2 workstation software that allows users to interact with NetView via a graphical user interface.

Following are the NetView 2.3 enhancements not included in last fall's announcement:

- The ability to manage Ethernet and frame-relay devices.
- The ability to support a virtually unlimited number of consoles. NetView previously had a limit of 99 consoles.
- A customizable 3270-based interface.
- Faster searching through automation tables that tell an application the right response to a given network situation.

Shoe retailer makes strides with EDI

BY PAUL GILLIN
CW STAFF

CAMBRIDGE, Mass. — Next time you try on a pair of Keds sneakers at Sears, chances are pretty good that electronic data interchange (EDI) got them there.

The Stride Rite Corp., the children's footwear giant that makes Keds and Sperry Topsiders, has used the computerized order-taking technology to improve customer relations, streamline shipping operations and boost the quality of data it collects from retail customers.

From a single EDI trading partner two years ago, Stride Rite's EDI operation has grown to include approximately 30 major trading partners. Officials hope to boost that number to 50

by the end of the year.

The payoff? "We have yet to engage in an EDI partnership where business hasn't grown at a double-digit rate in the year immediately following," said Roger W. Meeks, senior vice president of manufacturing and operations

ON SITE

The Stride Rite Corp., Cambridge, Mass.

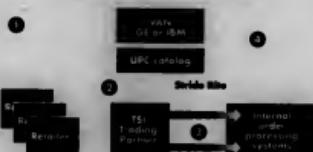
- **Challenge:** To convert retailer demands for faster order turnaround into competitive advantage
- **Strategy:** Move aggressively to adopt EDI
- **Results:** Business is up with EDI trading partners.

at the wholesale division of Stride Rite's Children's Group, Inc.

Stride Rite has certainly been doing something right. The company has racked up 27 consecu-

Continued on page 55

Stride Rite's EDI network



How it works:

1. Retail customers send purchase orders in ANSI-standard EDI format to a value-added network (VAN) operated either by General Electric Corp. or IBM. All orders use universal product codes from a catalog on the VAN.
2. Stride Rite's EDI Enterprise System/9000 mainframe disk up the VAN every evening and downloads the orders.
3. Order information is formatted for Stride Rite's internal order processing system using Trading Partner software from Transactional Solutions, Inc. In Windows NT, TSF software "is table and program driven with a build-in formula/programming language," said David Brown, a Stride Rite project manager. "You don't have to write a lot of code to add new features."
4. After the order is filled, invoice data is formatted by TSF's Trading Partner and sent back to the retailer electronically.

Source: Stride Rite Corp.

Product introductions aim to tie it all together

DEC, Cisco plan to develop pair of multiprotocol routers

BY JOANIE M. WEIKLER
CW STAFF

WASHINGTON, D.C. — Users of multiprotocol routers from Cisco Systems, Inc., and Digital Equipment Corp. stand to gain next year two low-end options that reportedly will be compatible with both vendors' existing product lines.

The two companies announced at the Interop '92 Spring conference here that they have already invested six months of engineering time in the upcoming, jointly developed multiprotocol products. They are being designed to fit DEC's DEClub 90 wiring hub form factor — about the size of a video cassette tape.

The routers will be offered by both companies as stand-alone devices or as modules that snap into DEC's wiring hub, company officials said. Pricing and shipping dates were not available, although Ralph Dormitzer, DEC's

group manager of low-end networks and communications, said "the hardware is 70% complete." Pricing will be announced at the end of the year.

The products are slated to support the various protocols necessary to exchange routing table information between routers over Transmission Control Protocol/Internet Protocol and Open Systems Interconnect networks. In addition, the routers will have configuration choices of two serial interfaces plus fractional T1, frame relay and X.25 interfaces, DEC said.

One potential glitch, according to John P. Gottlieb, senior analyst at META Group, Inc., a research firm in Westport, Conn., is that users integrating DEC hubs with the routers will require two management systems.

DEC's HubWatch system for the DEClub 90, Gottlieb said, will not be sufficient for both products. "This is an issue the vendors must iron out."

The routers will be manageable by both Cisco's NetCentral and DEC's Enterprise Management Architecture, according to the vendors.

Analysts deduced that DEC is looking to capitalize on the rich low-end market segment that has taken off with user initiatives to blend small, remote sites into

corporate networks. To date, DEC offers only a high-end multiprotocol router: the DEC Network Integration System 600, which started shipping last month.

However, Gottlieb said, "I don't see DEC as a strategic router player whether or not they grab Cisco. They will fur-

ther confuse their customer base by going outside for additional router technology."

Analysts said Cisco's motive was to gain further access to the DEC customer base as yet another distribution channel and that the move is not likely to represent an official low-end strategy for them.

SNMP holds steady as network standard

CONTINUED FROM PAGE 53

SNMP systems to collect LAN traffic and protocol analysis data from remote monitoring systems.

Novell also announced that LANtelligence Rmon included, will now run on NetWare as a NetWare Loadable Module. NetWare servers equipped with Rmon can capture and filter network packets, thus giving the result to a central, SNMP-based network management system for analysis.

The Rmon feature will enable DEC's NetWare Management System to manage a wider variety of LAN protocols, a Novell spokesman said. The system

currently monitors IPX and Transmission Control Protocol/Internet Protocol. Commercial release of the enhancements is planned by year's end according to Novell.

Other releases

Other SNMP announcements at Interop included the following:

- Standard Microsystems Corp., in Hauppauge, N.Y., announced a system for managing its products from either Cabletron Systems, Inc.'s Spectrum platform or Hewlett-Packard Co.'s OpenView.

- 3Com Corp. announced ViewBuilder/Linx, a software family

that is said to provide integrated, graphics-based management of 3Com's hub, bridge and router products. NetBuilder Management for 3Com bridges and routers is priced at \$1,500 and is available now. LinkBuilder 3GH Management, which manages 3Com FDDI and hub products, is scheduled for availability this month and is priced at \$8,000.

- Peer Networks in Sunnyvale, Calif., announced Multi-Management Information Base Agent software that enables nontechnical users to set up an SNMP-based network management system, the company said. The product is available now.

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LANs make way to hub

Another major network operating system vendor and eight suppliers stepped up to the plate to offer network services that run on Ungermann-Bass Inc.'s personal computer module for its Access/One intelligent wiring hub. Microsoft Corp. has succeeded Novell, Inc. in pledging to port its network software — LAN Manager — to UB's module when it ships in August.

Other applications slated to ship in the fall module that day will include Lotus Development Corp.'s Notes workspace package, a LAN analyzer from ProTools and communications and internetworking services from Eicon Technologies, Inc., BT and Olicom U.S.A.

The ability to shift LAN server functions to a centrally managed hub to free server cycles for file-and-print services was introduced by UB, although several hub vendors are expected to follow suit. Several Interop '92 Spring attendees stroked their chins when asked about the scheme, saying they need to learn more about the benefits and implications.

Kapor stresses U.S. network infrastructure

BY JOANIE M. WEXLER
CW STAFF

Mitchell Kapor, president of the Electronic Frontier Foundation and founder of Lotus Development Corp., told attendees in a plenary Interop '92 Spring show address that, "I feel the same sense of excitement about wide-area entrepreneurial opportunities with the Internet as I did with personal productivity tools in the '70s."

The Internet is a nationwide educational and research Trans-

mission Control Protocol/Inter-

net Protocol-based network.

Kapor is involved in helping commercialize the Internet to leverage the sprawling infrastructure of digital connectivity.

He said obstacles to maximizing the Internet include the network's heritage and reputation as a scientific tool and the need for the research and business communities to cooperate on

tapping its potential.

In addition, he said, the Internet is currently perceived as a "user-hostile" environment because of its Unix orientation, "but that is fixable with point-and-click graphical user interfaces," he asserted. "The Internet has to leave the nest and learn to fly."

Kapor suggested that the

proliferating Integrated Services Digital Network and cable television infrastructures are also possible conduits for completely uniting the country electronically because they represent other forms of end-to-end digital service.

"Until everyone can play, we can't achieve the full benefits of networking," Kapor said.



Kapor is pushing the commercialization of the Internet

Directory services key as mail nets grow

BY JOANIE M. WEXLER
CW STAFF

Hughes Aircraft Co. in Long Beach, Calif., runs myriad minicomputer, mainframe and local-area network mail systems that interconnect through a SoftSwitch, Inc. gateway.

The main challenge in meshing the diverse systems, said Steven H. York, manager of information exchange technologies, is providing users with a quick method of finding the address of a far-flung user on another system.

"When users send mail, they must know what system they're sending to," he explained.

York addressed business managers at a two-day Executive Interop conference for business

managers on messaging integration. In his presentation, he made a plea for the following directory service features from vendors:

- The synchronization of LAN and wide-area network messaging directories.
- Directories that allow users to search by multiple attributes, such as name, department or job function.
- The blending of mainframe and LAN vendor expertise in blending sweeping, multi-level-mail environments.
- Better off-the-shelf tools for administration, ongoing maintenance and directory synchronization.
- A standard directory application programming interface for local-area network-based products.
- Migration aids for legacy systems.



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Shoe retailer makes strides with EDI

CONTINUED FROM PAGE 53

tive quarters of increased earnings. During a recessionary 1991, its sales climbed 11%, to \$574 million.

Stride Rite management was skeptical of EDI at first, according to David Brown, a project manager in charge of the technology of the firm's EDI implementation.

Indeed, EDI has gotten a black eye because some retailers, such as Wal-Mart, Inc. and K mart Corp., have pressured their suppliers to go to electronic order processing or lose their business [CW, July 9, 1990].

"Some retailers haven't looked at EDI as a trading partnership as much as 'We

got a bigger club than you,'" Brown said.

However, management doubts began to melt after Stride Rite began turning in healthy sales increases to its early trading partners. "The bottom line is we're doing more business without using more resources," Brown said.

Changing business ways

Stride Rite's three divisions — kids' shoes, Keds and Sperry Top-Siders — are in various stages of EDI implementation. Keds, which does the most business with department stores, is leading the charge with about a dozen trading partners.

Stride Rite also sees EDI's potential to change the way the company does business. With the recession putting the squeeze on retailing margins, department stores have put more pressure on suppliers to deliver products more quickly so that stores can carry less inventory.

"It's survival of the fittest at this point in time," Monks said.

By taking orders electronically, Stride Rite can generate picking orders at its distribution centers just hours after the order is received.

By the end of the year, the company hopes to add bar-code scanning so that a

load of shoeboxes destined for a customer can be computer-matched against the order to catch discrepancies.

Speedy delivery

All told, EDI-driven changes have enabled Stride Rite to cut turnaround times on shipments from three days to a day and a half. And the company is shooting for same-day service by the end of this year, according to Monks.

EDI's potential does not stop there, according to officials. Stride Rite is testing electronic funds transfer and electronic funds transfer in hopes of getting paid faster.

Planners also want to start collecting more information from retail customers. For example, EDI can be used to gather point-of-sale information that can tell the shoemaker what is being sold in which stores at what time. That data either is not available on paper or is too bulky to load into the company's financial systems, Brown said. But with EDI, data transfer is a snap.

Datacomm Commentary

"Access is as important as information: that's why LEXIS® 2000 MODEMS are UDS"

MeadDataCentral

The 'Rite' approach

No matter how clean its showroom, a shoe store's stockroom is usually a jumble of shoeboxes packed haphazardly together by size. As a result, since most managers typically do not have a complete picture of their inventory, according to Roger W. Monks, a senior vice president at Stride Rite.

Stride Rite is using computer technology and a database of universal product codes (UPC) to change all that. About 50 sales representatives in the kids' shoes and Keds divisions now carry a portable data terminal nicknamed The Rite Approach on sales calls. The terminal consists of an oversized briefcase containing a scanning gun, a handheld terminal and a miniature printer. It was developed by Stride Rite and Symbol Technologies, Inc. and costs about \$2,500.

Sales reps now walk into a retail shoe store and quickly take inventory of the shelves with the scanning gun and capturing that information in the handheld terminal. Then they plug a phone line into the terminal, which links up an electronic UPC catalog on a value-added network. The portable printer shoots out an accurate snapshot of the retailer's inventory.

The technology has reduced the time needed to take inventory from eight hours to less than two hours and lets sales representatives write "more intelligent orders," Monks said. The next phase of the project, scheduled to begin in August, will compare the store's stock against an inventory model specified by the retailer and recommend what the retailer should order. Stride Rite also plans to sell the high-tech briefcases to retailers — at cost — later this year.

PAUL GILLIN

LARGE SYSTEMS

HARDWARE • SOFTWARE • STRATEGIES

Tardy IBM looks to tomorrow

BY JOHANNA AMBROSIO
CW STAFF

The axiom "better late than never" took on a newcomer last month, when IBM introduced its automated tape library some five years later than Storage Technology Corp., its major competitor in the storage market.

Still, IBM executives said they hope to gain a long-term edge with a family of storage systems — disk, tape, optical and whatever else comes down the pike — that work together. In May, the company added a new release of its Data Facility Storage Management Subsystems (DFSMS) software, an optical server that reads data stored on disk and other products to its storage lineage (see chart).

"We want to enable information across an enterprise with ease of use, available on demand, at the right price," said Ray Abu-Zayyad, general manager of Adstar, IBM's storage products subsidiary in San Jose, Calif.

The best way to do that, IBM executives said, is to provide a hierarchy of storage systems that work with IBM and non-IBM computers. IBM said it will allow MVS and VM hosts to back up local-area networks and workstations.

The backup system will support IBM platforms including DOS, OS/2 and the RISC System/6000, as well as Apple Computer, Inc.'s Macintosh, Sun Microsystems, Inc. workstations and Novell, Inc.'s NetWare-based networks.

This marks the first time that IBM has pursued an "open"

strategy in its storage products unit.

At the heart of IBM's storage strategy is intelligent software that allows the system to make an increasing number of decisions — for example, on what medium data should be stored. Programs and end users would only need to specify what characteristics they desire — whether, for instance, a response time is required, for example.

IBM has started putting these kinds of capabilities into its storage software under the rubric of its Systems Managed Storage (SMS) architecture. IBM claims that some 1,500 customers are using SMS software. A recent study by Computer In-

telligence in La Jolla, Calif., said 40% of the 500 customers surveyed have already implemented SMS or are planning to. The remainder have no active plans to do so.

The SMS piece may be what sells the tape library, observers said. Abu-Zayyad said he hopes to sell in the "few hundreds" each year. Gartner Group, Inc. analyst Nick Allen said, "The prospect of integrated software is emotionally attractive." He added, however, that "the low hanging fruit are gone" and that IBM will have a tough sell.

Abu-Zayyad, for his part, acknowledged that by waiting five years to introduce a tape library,

Continued on page 58



CW Chart, Tom Mansfield

D&B to port product line to four Unix platforms

BY KIM S. NASH
CW STAFF

FRAMINGHAM, Mass. — One month after reiterating a year-old plan to revamp its broad-based product line to Unix, D&B Broadstreet Software said it will port its product line to four Unix platforms.

The first wave of products is due out by the end of the year. Pricing issues are not finalized, but users can expect to pay "somewhere in the \$30,000 range" to transfer licenses for mainframe software to Unix-

based packages. New Unix applications are expected to cost about 30% less than mainframe applications, said Bobby Cameron, D&B Software's director of strategic and business development.

However, the \$549 million company acknowledged that the majority of its 12,000 customers worldwide — about 60% — are content with mainframe-centric setups. As such, the Unix strategy is aimed at an estimated 20% of the installed base that is currently investigating downzoning.

D&B Software signed joint development deals with Hew-

lett-Packard Co., Digital Equipment Corp., Data General Corp. and ICL to port financial, manufacturing, human resources and other packages to those vendors' versions of Unix.

What's the buzz?

Absent from the list is an IBM AIX port. Paul Cobage, director of Unix systems at Dataquest, Inc., said this was because IBM had yet to unveil a box "bearly enough" for large businesses.

"Only now are we beginning to see Unix machines with the DASD muscle and file integrity capabilities to handle big business," Cobage said, pointing to the new boxes recently unveiled by HP (CW, May 4).

Although some users interviewed last week were undecided about moving to Unix, others

applauded D&B Software's announcement.

Liberty National Bank & Trust Co. in Oklahoma City is at the starting line of a seven-year plan to move core applications off an IBM 3090 Model 200E mainframe to a network of Unix-based machines from HP. D&B Software's new enthusiasm for smaller platforms "is critical for us," said Mike Panaas, vice president of information systems at the bank, which has \$2.3 billion in assets.

"We're not content with how much the 3090 costs in yearly maintenance, but we're comfortable with D&B and didn't want to change [software] vendors," he said.

Panaas said he is unconcerned that D&B Software will not have Unix editions of all his applications out immediately.

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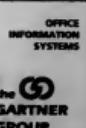


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Tool estimates database query costs

BY THOMAS HOFFMAN
CW STAFF

NEW YORK — Information Builders, Inc. recently introduced a software tool designed to help its Focus software users gain an accurate assessment of intelligent query costs required to access information from different data fields.

SmartMode for Focus uses an embedded artificial intelligence expert engine to predict the resource utilization of Focus requests. Focus is a fourth-generation language for application development. SmartMode for Focus also governs the

execution of database requests and estimates the cost of such inquiries, including the joining of different data fields.

Robert Szwet, division manager at Information Builders, said the company began research a few years ago to develop an intelligent query product for its many Focus users who needed such a tool for cost estimates associated with IBM's DB2 database management system. Szwet said Information Builders initially "hit a wall" in trying to develop the software but noted that AI enabled the company to break through.

Information Builders also went beyond

its original goal of developing a product for use with DB2. SmartMode for Focus is able to access 54 different data and database structures, such as databases from Oracle Corp., Sybase, Inc., Informix Software, Inc., Computer Associates International, Inc. and Teradata Corp.

Data extrapolation

SmartMode for Focus acquires information about data access patterns by monitoring disk traffic and simulating requests. Based on this information, SmartMode for Focus constructs a knowledge base from which to extrapolate

late costs of future requests.

Under SmartMode for Focus, user requests are controlled by a Collector Training System that captures statistics on how requests are processed against heterogeneous data sources.

The SmartMode System Administration Facility interactively builds resource utilization rules. SmartMode's Governor module analyzes each query against predefined rules, predicts resource utilization and accepts or rejects the query.

SmartMode for Focus is being offered as an option to Focus users at prices ranging from \$24,000 to \$39,000. SmartMode for Enterprise Data Access/SQL Relation 2.0 was also recently introduced and is immediately available on IBM's MVS and VM platforms.

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Tardy IBM looks to tomorrow

CONTINUED FROM PAGE 57

IBM "misled the market. We screwed up," he maintained, though, that "the market is not over" and that customers have expressed a willingness to adopt a consistency strategy of using both IBM and Storage Tek libraries.

Another plus, according to Robert Calley, an analyst at Technology Investment Strategies Corp. in Framingham, Mass., is that "no matter how fast the two go, tape will never be as fast as disk." Nevertheless, he will be around for a long time, he said.

Whether IBM can capitalize on the tape library market remains to be seen, but in the meantime, there is likely to be one significant benefit for users: price reductions of the automated tape libraries already on the market. "The IBM library is in a new level of competition," Calley said. "Up until now, Storage Tek has had the market just about to itself."

Allen predicted a 10% to 20% price erosion because of competition between IBM and Storage Tek. And he expects other automated tape libraries to be introduced this year by Amperf Corp. and Hitachi Data Systems Corp.

IN BRIEF

Candle, OSF to address DCE

■ Candle Corp. in Los Angeles entered an agreement with the Open Software Foundation (OSF) last month to address the "proof of concept" of the OSF's Distributed Computing Environment application programming interfaces for IBM's MVS.

■ If you're looking for a mortgage to buy a house, your credit worthiness may be decided by a neural network-based application. HNC, Inc. in San Diego formed a group to offer its neural network solutions to mortgage originators, insurers and related investors. This group will be developing products under a platform called the Automated Mortgage Processing System.

Legent holds distribution tool for further testing

BY GARY H. ANTHES
CW STAFF

ORLANDO, Fla. — Legent Corp. told customers at its recent user conference here that they will have to wait a bit longer for its software distribution product, but the firm promised the wait will be worthwhile.

When Legent merged with New York-based Spectrum Concepts, Inc., in January, it decided to hold up the introduction of Spectrum Concepts' new software distribution product,

XCOM/SDS, which was originally planned for a midyear release. Legent said it wanted to test it more thoroughly and integrate it with its Endevor product line for software management. Components of XCOM/SDS reside on minicomputers, workstations and local-area network servers. Working together, the components provide packages of software and data for distribution, store the packages on a central "repository," send them electronically to remote sites, install them automatically at speci-

fied times and verify the installations. Bandwidth permitting, XCOM/SDS can update hundreds of network nodes simultaneously.

The product is controlled on the mainframe under VTAM and uses IBM's Systems Application Architecture-compliant LU6.2 communications technology. It will broadcast software to the major environments, including DOS, IBM's OS/2 and Application/XSeries/400, Microsoft Corp.'s Windows and Unix.

XCOM/SDS will be generally available near the end of the year, said Meyer Sheik, director of marketing at Legent's Spectrum Concepts Division.

Sheik said XCOM/SDS is being beta-tested now at several

organizations with thousands of LANs and tens of thousands of personal computers, including the U.S. Postal Service. None of the beta-test users would comment on the product, however.

XCOM/SDS is built on top of the XCOM 6.2 product for fast bulk file transfer, introduced by Spectrum Concepts in 1987. To get to XCOM/SDS, the computer sends a database request to a target system such as the location of target PCs and a Windows-based administrator's workstation for sending distribution schedules and parameters.

Legent is working now to integrate its Endevor product for software management with XCOM/SDS to allow transparent access to SDS services from Endevor. The integration will allow software updates developed under Endevor, with distribution instructions, to be passed easily to SDS, Sheik said.

Sheik also said Legent will enhance XCOM/SDS to include a software and hardware inventory management capability. An

other enhancement will provide remote diagnostics, such as notification of which PCs did not receive the intended software.

Help-desk help is on the way

Leget treated user group attendees to a demonstration of a prototype of its Professional Help Desk (PHD) Advisor, an artificial intelligence tool that diagnoses and diagnoses system trouble.

A knowledge advisor and expert system reside on a PC and exchange information with IBM's Information/Management hardware configuration product on a minicomputer.

Callers describe problems and indicate their severity and priority. The expert system component on the PC then searches its knowledge base for similar symptoms. It prompts the caller

for additional information and displays possible causes, even those that have been ruled out.

PHD Advisor also outlines recommended actions. In some cases, the user can command PHD Advisor to implement a solution. Programmers can add to the knowledge base using the knowledge editor. PHD Advisor will be shipped with predefined knowledge of VTAM printer and terminal management and solutions according to Legent's "Theorem." "Theorem" will have limited availability by the end of the year and general availability next year, a spokesman said.

GARY H. ANTHES

Open systems more than Unix, users say

Survey finds most IBM shops pleased with interoperability of status quo

BY KIM S. NASH
CW STAFF

The state of Oregon runs both an IBM Application System/400 and a VME Laboratories, Inc., VS Model 7210. However, most mission-critical programs — including the state's innovative purchasing and dial-in project bidding system — reside on IBM's box.

"We're gearing the AS/400 for the future, which involves a lot of client/server computing," said Mike Stone, manager of information services for the state. "That machine is open; we won't need Unix for another five years, if even then," he added.

Stone is in good company.

A recent report from International Data Corp. (IDC), a Framingham, Mass.-based market research firm, found that 88% of 250 U.S.-based AS/400 and System/36 and 386 sites surveyed said they are not currently pursuing a Unix path, despite the hype surrounding the so-called open systems architecture.

Sixty percent of the respondents said they are satisfied with the openness of their IBM systems, the report said. These stay-at-home pegged the

9,000-program portfolio of off-the-shelf applications for IBM's misfortune from the firm and third-party software makers as a big draw.

Mark E. Faia, branch manager at Pacific Mountain Computer Products, Inc., a second-tier dealer in Union City, Calif., said he has seen just one AS/400 client this year drop the platform for a Unix system. "People talk about the great price/performance ratio of Unix, but used AS/400 prices are coming way down," which gives IBM's proprietary minicomputers an attractive ratio as well, he said.

However, one user interviewed last week said he is not pursuing client/server via the AS/400 because the machine is inadequate to function as a server. None of Chicago-based Sara Lee Corp., 40 to 50 AS/400 models in approximately a dozen of its 100 independent divisions worldwide and currently used as a server, said Wayne Swanson, vice president of corporate systems.

Even so, he said the first time he is studying client/server competing in relation to the AS/400 "very seriously." As IS teams is looking into how to use the box in a distributed computing scheme,

but there are no immediate plans to get into client/server on a large scale.

Meanwhile, Sara Lee uses IBM's generic Data Equipment

ways to other platforms, but "DEC fits more easily into our environment for now."

IDC found that of the 28% of the 250 sites that claimed they are currently implementing an open systems strategy, a significant portion is doing so not through client/server or Unix, but through a unified approach to

puter-aided software engineering tools from competing vendors Syntex Corp. and System Software Associates, Inc. (SSA). The pack products subsidiary creates fewer applications in-house than it buys from third parties.

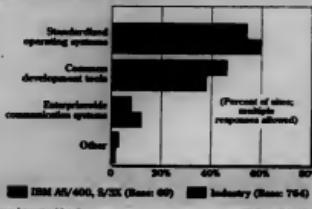
However, "we want what we do decide to build to be up quickly and . . . able to communicate with each other. The way to do that is (by) buying a singular, standard approach," said Ross Sonnenfeld, director of information systems. He said price would be as much of a factor in the decision between Syntex and SSA as quality and the associated learning curve.

IS budgets at IBM midrange sites are expected to stabilize this year. Nearly half the IDC respondents said they expect no change in total IS spending in 1992. About 40% said they will spend more this year compared with 1991, while 13% expect to spend less.

One area, in particular, that AS/400 shops are largely shorting their wallets to is personnel. IDC said that a whopping 71% anticipate no change in IS personnel budgets.

Indeed, this year for AS/400-specific personnel, 40% have cut nearly 60%, said Jim Davis, head of William Davis & Associates. She blamed decreased hiring on the economy.

At the core
Only 69 out of 250 IBM midrange shops surveyed said they are pursuing open systems



Corporations use VAXs as servers in the Chicago corporate office.

The VAX is "a naturally more open system" because you need SNA to get in on an AS/400," Sawyer explained.

He said he is happy that IBM

is trying to make the AS/400 more accessible via various gate-

ways to other platforms, but "DEC fits more easily into our environment for now."

IDC found that of the 28% of

Weighing the balance

According to a study by Gartner Group, Inc., in Stamford, Conn., only a quarter of the five-year life cycle cost of a PC software is accounted for by license and upgrade fees. The balance lies in indirect labor costs, including 17% for distribution and installation. A firm with 2,000 PCs may spend \$30 million on PC software over five years, \$5 million of which is spent for getting the software to the PCs.

The cost is only one problem. "Syncing" is the other step. Next-generation systems will require a high degree of synchronization between software updates on server and client platforms. In many instances, a change to the back end will require upgrading thousands of PCs within a few hours.

These forces will lead users to seek automated solutions, the Gartner study said. "Client/server computing on a broad scale would be impractical without an ability to automatically distribute and install software on every computing platform in the enterprise."

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Publisher expedites client/server solution

BY GARRY RAY
CW STAFF

Newly-based Simon & Schuster, Inc. may be an old-line publishing company, but a new development tool is helping to speed the company's entry into multiprocessor, client/server applications.

An operating unit of Paramount Communications, Inc., the \$1.5 billion subsidiary comprises more than 10 independent business units in four major operating groups, including education, consumer, business and professional and international operations. Its more than 60 imprints include Pocket Books, Brady, Que, Prentice Hall, J. K. Lasser and Betty Crocker.

But Simon & Schuster's business unit structure had caused an increasingly vexing problem, according to technical manager Tom Mascioccio, who joined the company in 1991.

Traditionally, Simon & Schuster business units have been responsible for their own

information systems, he said. That gave each unit control over its operations but led to inefficiencies. According to Mascioccio, "People were reinvent-

ON SITE



Simon & Schuster, Inc.
New York

- **Challenger** Replaces isolated finance, production and manufacturing systems with cohesive and unified server-based systems supporting Windows and Macintosh workstations.
- **Synergistics** Implements SQL Server using DEC VAX 4300s develop identical client applications for Macintosh and Windows workstations using Neuron Data's Open Interface development environment.

- **Russell** Opens interface reduces client development time from two years to one year; first stage of Publishing Control System is now being launched.

ing the wheel. They were putting resources into solving the same problems." Even

Continued on page 62

IBM vows '92 repository delivery

Big Blue executive outlines '92-'93 project status for key software projects

BY JOHANNA AMBROSIO
CW STAFF

The Repository Manager will be completed this year, an IBM executive promised, with tools that are able to use it rolling out from IBM and third parties this year and next.

Other areas that IBM is working on, the executive said, include the unveiling, later this year, of a defined OfficeVision framework that incorporates third-party tools, "open frameworks" for software for specific industries including manufacturing and finance and continuing development of the DB2 data base management system to make it more robust.

"The Information Model will be completed this year," said Earl Wheeler, general manager of IBM's Programming Systems division of business in Somers, N.Y. He made his remarks last month during an interview in New York.

Object definition

The Information Model, a major component of Repository Manager's architecture, defines the objects that application development tools will use to share information throughout a development project. It is this component that will allow users to mix and match different tools from different vendors.

"This year and next year,

other vendors will enable to the Information Model," Wheeler said.

Kathy Lewis, IBM's marketing manager for application de-



IBM's Wheeler sketches delivery schedule of key projects

velopment, said that IBM "underestimated the work" and that the project is "bigger than we thought." She said IBM and its Repository Manager development partners — vendors that include Bachman Information Systems, Inc., and KnowledgeWare, Inc. — are "frantically working" to complete Repository Manager.

Other areas under development at Programming Systems include the following:

- The formal announcement, later this year, of OfficeVision as an "open architecture" in the model of AD/Cycle, with participation from other vendors. Plan-

are to support workstations running AIX, Unix and OS/2 as well as mainframes and local-area networks. The OfficeVision framework will "significantly de-generate" a Notes or CC/Mail packages, Wheeler said.

- An increasing number of workstation and personal computer-based software tools that mirror or play off midframe-based software. This year, about 70% of the output of Programming Systems, or some 5 million lines of code, will ship with workstations, Wheeler said. This includes languages, compilers and DBMSs.

- A new version of DB2 every 18 to 24 months, Wheeler said, with continuing performance improvements and plans to move over some of the technology from IBM's IMS database manager to make DB2 "industrial strength," he said.

- A new version of DB2 every 18 to 24 months, Wheeler said, with continuing performance improvements and plans to move over some of the technology from IBM's IMS database manager to make DB2 "industrial strength," he said.

- Open software frameworks for industry-specific applications including finance, insurance and manufacturing.

In turn

Wheeler said that even though the various IBM business units are more autonomous given the reorganization announced in December 1991, everyone is still singing from the same songbook when it comes to the major software initiatives such as SystemView, Systems Application Architecture and others.

"The executives from the lines of business choose those things that represent the best architectures, interfaces and structures, and we insist on compliance," Wheeler said. "Inside IBM there is a community of software people that, no matter how we organize, know what parts need to work together or else their products will not provide the value that they should."

Wheeler acknowledged that keeping the chair in tune these days is "a little" more difficult than it has been in the past, but he insisted that "we have more discipline to make these products work together than we had a year or two ago."

4GL development tool targets images

BY ELLIS BOOKER
CW STAFF

ORINDA, Calif. — Until now, information systems departments that tailored an electronic imaging system to their own needs have had to rely on development tools from their imaging system vendor or the know-how of outside consultants.

But that will change this month with the debut of a third-party development environment from Image Innovations Solutions, Inc.

The company's Image Application Workbench is a fourth-generation language (4GL) development tool set for the client/server imaging platform from Plexus Software, Inc., a San Jose, Calif.-based company whose imaging technology is the basis for products from several computer vendors, including Andmail Corp., Digital Equipment

Corp., Fujitsu Ltd., Hewlett-Packard Co. and NCR Corp.

Image Innovations' Image Application Workbench consists of two parts: FloDirector, a database with a set of standard applications for working with and presenting electronic images; and FloDeveloper, a set of tools for

Andersen Consulting. . . . They can develop an application themselves," said Mary Hamway, a senior analyst at New Science Associates, Inc. in Southport, Conn.

"Our product is aimed at users, not developers," said Image Innovations' president and co-founder, Nasim Balaki. Prior to forming the company last year, Balaki was director of business development at TRW Financial Systems, where he was involved in that firm's move into the imaging marketplace.

The Image Application Workbench "combines a quick prototyping environment with the actual code generation," said Bruce Silver, image services director at BIS Strategic Decisions in Norwell, Mass. But Silver said he believes the

UERS DON'T NEED TRW or Andersen Consulting. . . . They can develop an application themselves."

MARY HAMWAY
NEW SCIENCE ASSOCIATES

developing system requirements, testing designs and producing prototypes.

"Users don't need TRW or

Publisher expedites client/server

CONTINUED FROM PAGE 61

worse, he said, "there are places where there is no system at all. They still use paper."

That was the catalyst for Simon & Schuster's Systems and Technology Group to create a single set of applications that would be used primarily in each of the company's business units. Called the Publishing Control System, the final result will be a series of tightly integrated applications that will address each of the three stages in a book publishing project: finance, production and manufacturing.

Business units, such as Consumer Publishing and Prentice Hall Computer Publishing, will be free to install the Publishing Control System or to use their traditional systems, Masciovecchio said.

The first component application, a cost-estimating program, will be used by the company's higher education unit starting in June.

Delivery of this first program will be nearly a year away and the company used Neuron Data, Inc.'s Open Interface to develop the application, Masciovecchio said.

Open Interface is a graphical programming environment that allows developers to write an application on one platform, generate the required C application code and recompile the application on Apple Computer, Inc.'s Macintosh, Microsoft Corp.'s Windows, IBM's OS/2 Presentation Manager, the Open Software Foundation's Motif and Open look platforms.

In addition, the Publishing Control System, the Systems and Technology Group made a number of baseline hardware and software decisions. One decision was that "different people would

have different systems, depending on what they do," Masciovecchio said.

Users in production would have Macintosh systems to do on-line page makeup, while those in finance would use Windows-equipped personal computers. Furthermore, the entire system would revolve around a Digital Equipment Corp. VAX database server running Sybase, Inc.'s database management system.

Kernel keeps records

Central to the system is a database kernel with "title records" that contain the book title, tracking code, author name and other information needed throughout the publishing process, according to Masciovecchio.

Specifying and developing these database structures and procedures was relatively straightforward, Masciovecchio said. "The most difficult work took place on [Macintosh and Windows-based] client" systems, he explained.

Wanting to have all of the applications available to all users, the Systems and Technology Group had at least one false start. One tools vendor who claimed applications portability across Macintosh and Windows platforms "didn't deliver, so we had to backtrack to Open Interface," Masciovecchio said.

Once that had been decided, Masciovecchio's staff of 15 developers wrote the first application in parallel on PCs and Macintoshes. Portions of each application were distributed among developers and "integrated into a master system the closer we got [to finishing]," he said.

Having cut a year from development plans and with the first element of the Publishing Control System set for imminent launch, Masciovecchio said he hopes Simon & Schuster users will embrace the new technology. Although about 30 people will initially use the cost-estimating program, Masciovecchio predicted that "we'll be going up to 300 [users] within a year."

Further out, Masciovecchio said, another application created with Open Interface, dubbed the Document Management Facility, will integrate project scheduling and electronic document management.

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- Intuitive, consistent graphics interface across modules and sharing of models across all three platforms (Windows, OS/2, Macintosh)

IN BRIEF Mac debugger introduced

■ SoftPush, a debugger aimed at developers of software for Apple Computer, Inc.'s Macintosh systems, was introduced by Language Systems Corp. in Herndon, Va. The \$295 product conducts more than 50 tests for resource validity problems that can cause applications to be incompatible with other software.

■ Sweden's Ericsson Telecom said its Sun XView computer-aided software engineering tool will be available on Hewlett-Packard Co.'s HP Apollo 9000 Series 700 workstations. HP-Sweden did the port using Edison, NJ-based UnixPress Software, Inc.'s XView Toolkit.

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⑧ Utilities/Power
⑨ Manufacturing/Processing/Manufacturing
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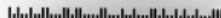
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Where do you stand?

The Great Debate

Monday, June 22, 1992

Should the U.S.
have a technology
policy?

Can it rekindle
America's economy?

Computerworld's 25th Anniversary Leadership Challenge

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Monday, June 22, 1992

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PRODUCT SPOTLIGHT

The well-equipped help desk

On the typical help desk, pressures are high while budgets are low. But once you foot the bill for a little automation, the benefits are many.

BY JULIA KING

Fifteen minutes. Make that 15 long minutes. That was the average time of it would take to put in a phone call to the help desk at Color Tile, Inc., and get a computer problem solved.

Maybe get it solved.

More often, the employee would be placed on hold and then transferred at least three times among more than a dozen technicians whose reference tools consisted of handwritten manuals and vendor paper-based documentation. At the end of 15 minutes most callers still didn't have answers to their questions. And at the end of each month, the help desk had rung up an astronomical telephone bill, such as the \$465,000 bill it received back in February 1991.

That was last year. Today, thanks to an automated help desk system called Expert Advisor from Indianapolis-based Software Artistry, Inc., 80% of employees' problems are resolved on the first call by one member of a streamlined staff of nine help desk operators.

Rather than page through dog-eared manuals, operators stationed at personal computers now access answers to users' queries from a menu or database of common problems, which was developed in-house using expert systems capabilities built into the new help desk software. All operators have direct access to the database and to the help desk system, which runs on an IBM Personal System/2 Model 95 local-area network server linked into a Novell, Inc. network.

"Before we automated our help desk, we had 15 highly skilled technicians and trainers doing nothing but answering problem calls from our store personnel," says Color Tile project manager Philip Kunkle notes. "It was clear we needed a central information source to route calls, provide information and answer

questions quickly and accurately."

Not all help desks can afford — or need — such a high-end, expert system-based help desk tool. In fact, there is now quite a range of help desk software available, from front-end products that supplement (usually mainframe-based) trouble tracking and management systems already in place; to PC-based products that perform one task such as call logging or call tracking; to more fully functional (usually LAN-based) products that combine these functions with problem resolution; or mainframe-based products that started out as trouble tracking systems and have been expanded to include help desk functionality.

On the mainframe side, many systems originally intended for network and systems management have been expanded to support help desk operations. Some of the main products in this category include IBM's Info Manager, Computer Associates International, Inc.'s CA-Netscan and Peregrine Systems, Inc.'s Peregrine Network Management System.

The popular choice LAN-based products designed specifically for help desks are also popular. Leading products include Answer Computer, Inc.'s Avipri family of products, Beta Data Management Systems, Inc.'s HEAT Helpdesk Expert Automation Tool; Magic Solu-



Steve Tice

tions, Inc.'s SupportMagic; and Trident Software Co.'s InfoTrak.

The important thing, experts say, is to get something — anything — automated on the help desk. The benefits are many: Users get one-stop shopping for answers to their questions; help desk personnel are able to solve problems more effectively; and information systems managers get an ongoing record of user problems and equipment trouble that they can use for future purchases or setting up training programs.

Most companies start with basic needs, which include the following:

• Logging incoming calls.

• Tracking requests through the help cycle.

• Developing a problem management system or comprehensive database of solutions.

On a typical automated help desk, when a call comes in, an operator will log the name of the caller and record the kind of equipment he is using and the exact nature of the problem. This information is automatically stored in a database or logging system.

That database forms the basis of a problem management system, which operators use for background information, such as a history of the caller's problems or records of similar problems and how they were solved.

Most help desk systems allow different types of searches, including keyword search and search retrieval. Hypertext capabilities are also available as part of some automated help desk systems.

What really differentiates one help desk from another is what happens to the information once the operator logs it in. On

Continued on page 65

INSIDE

Cost Control

Costs are high, but justifying these costs is easy. Page 67.

Not all Fun and Games

Nintendo turned up the HEAT with automation. Page 68.

Product Guide

A listing of software products to help the help desk. Page 70.

King is a free-lance technology writer based in Ridley Park, Pa.

Automation benefits help desk

CONTINUED FROM PAGE 65

one side, there are expert systems-based products, most of which rely on either decision-tree logic or rules-based technology to automate problem resolution.

Decision-tree logic often requires an intensive and time-consuming effort on the part of programmers. They write a fixed series of questions that, in actual use, prompt operators for answers and lead them to a resolution. Rules-based technology is somewhat more flexible, but like decision-tree logic, it is not intended for neophytes. Companies set up implementation of expert systems technology only want to consider what is called a knowledge-based system.

These systems give programmers a running start by supplying some built-in problem-determination procedures geared toward a certain type of equipment or common problems that arise in a particular environment, such as a LAN environment.

Other more user-friendly systems, such as Trident Software's InfoTrak, allow the problem resolution database to be built with free text. Instead of being prompted with preprogrammed questions, the operator searches the database via a variety of parameters, including problem status, machine serial number and technician name.

Export alternative

Somewhere in between are "case-based reasoning" products. Whereas traditional expert systems rely on prestructured logic to build a knowledge database, case-based reasoning takes a "by example" approach to problem-solving, according to Chuck Williams, executive vice president and chief technical officer at El Segundo, Calif.-based Inference Corp., which offers

CBR Express.

Like other case-based reasoning products, CBR Express' knowledge base consists of examples of actual problems, which are made into "cases" and entered into the system's database by help desk analysts using free English text. "One of the chief benefits of CBR is that help desk



Perspective monitoring systems

These tools can detect network errors, on-line system outages, performance degradation and predictives about future occurrences of these faults. An interface with problem management systems easier to implement than ever.

Help Desk Institute

analysts can build the cases cheaper than programmers developing them," Williams notes.

That was just the ticket for Julie Johnson, a consultant at Texaco Corp.'s Interactive Computing Services in Houston.

Texaco's help desk supports 50 to 75 different hardware and software systems and some 10,000 local and remote users. Because of the sheer size of the help desk's user base, Johnson needed an easy way for her staff to build a database of resolutions. The company purchased CBR Express last December and is running it on Microsoft Corp.'s LAN Manager. During the last five months, Johnson says, her staff

has developed more than 1,000 cases that are "extremely simple" to develop.

On the downside, the product has only limited call tracking and report generation capabilities. Texaco programmers had to make up for the product's weaknesses by doing things such as writing an in-house application for statistical reporting.

Technical trade-off

Texaco's trade-off is a common one. Consultants emphasize that no help desk system performs all the requisite help desk functions — including call logging and tracking and problem management — equally well.

One product may feature advanced expert system technology for compiling a database of resolutions but fall short in the kinds of interfaces it can generate, says Bill Rose, founder and director of the Software Support Professionals Association in San Diego. Another may have a powerful engine for searching a database of problem resolutions but lack an easy-to-use master user interface.

The latter can pose a big problem for choosing a system, considering the fact that ease of use is a primary purchase consideration. If the system is hard to use, there's little likelihood that help desk staffers will log every phone call that comes in. Or they'll log them, but the log will be sloppy or inaccurate. If you don't get good information at this crucial first step in the help cycle, you stand little chance of developing a fully functional help desk system.

If you run into the "trade-off" dilemma, there is a way out — through interfaces built into some help desk systems. Some high-end packages, such as Answer Computer's Apriori and Hammerhead Technology Partners, Inc.'s Utopia, are actually sold in modules rather than in one comprehensive package, and the modules

are equipped to interface to other systems such as mainframe-based trouble tracking systems that may already be in place.

Since individual modules cost significantly less than complete systems, it also makes available to organizations with limited help desk budgets at least some basic help desk technology.

Interfaces also allow you to leverage your investment in existing systems, such as mainframe-based problem management systems. CJ Penney Co.'s Dallas-based help desk coupled an Apriori problem management module with its in-place IBM system for call tracking, says Karen Shulstad, CJ Penney's store systems support manager (see story page 67). Later, when Apriori announced a call management module, the retail giant was able to swap out the system.

You can also purchase a system that is integrated with an interface and running code. "Some help desk systems are being positioned as front ends to more comprehensive problem management systems already in place," notes David Kuches, a consultant at Systems Management Engineering, Inc. in Tampa, Fla. In these cases, the issue of how straightforwardly two systems will interface should be at the top of a manager's list of considerations for buying help desk tools.

Interface importance

Interfaces to multiple help desk systems is an important issue. When buying, users should consider the cost and time it may take to develop interfaces in-house as opposed to buying off-the-shelf interface solutions.

Only after an organization has the basic help desk tools installed and running smoothly should it begin to consider some

After the dust settles . . .

If you have some money left in your budget after you've fully implemented the basic call logging and tracking tools, you may want to consider investing in some of the following helpful add-on technologies:

► **Automatic call distributors (ACD).** These are software-based tools that work in conjunction with computerized telephone switching equipment, to among other things, even distribute incoming calls among available operators. ACDs also work to enhance a help desk's overall reporting capabilities because they track and store information such as the number of abandoned calls and the length of time a call is left

on hold before it is abandoned. This data helps in identifying staffing needs.

► **Remote access and terminal emulation tools.** These, too, are software-based systems that enable help desk analysts to dial into other PCs or other systems to see what is happening on a user's screen. The user can be across the hall or across the country.

► **Voice response units (VRU).** VRUs rank high on many managers' lists of useful add-on tools. That is because they enable callers to bypass help desk personnel and instead direct themselves through routine software or hardware usability questions and prompts via a series of keypad options. This allows help desk operators to work on more complex problems such as troubleshooting system bugs or failures. It also enables companies to offer users some level of assistance when the help desk is shut down.

For the time being, VRUs fall more into the category of bells and whistles, "but this is bound to change as computing environments become more complex," says Gretchen Stout, an independent help desk consultant based in St. Paul, Minn. The only alternative, she says, is for companies to increase their help desk staffs as they add new systems and software. ■

JULIA KING

Beyond the basics

Following are some additional members of today's help desk toolkit:

Automatic call distributors

- AT&T Business Communications Systems, Bridgewater, N.J.
- Definity ACD
- Octel Communications Corp., Milpitas, Calif.
- Aspen
- VMX, Inc., San Jose, Calif.
- VMX 100, VMX DIAL.

Remote access tools

- Raneo Software, Inc., Orem, Utah
- Carbon Copy
- Dynamic Microprocessor Associates, Inc., Huntington, N.Y.
- Synectech, Inc., Phoenix, Ariz.
- Infobor
- PC Anywhere

Voice response units

- Intervoice, Inc., Dallas, Texas
- RobotOperator

of the useful add-on technologies. Add-ons include automatic call distributors, voice response units and remote access software (see story this page).

Looking ahead, analysts say the array of help desk tools will only continue to broaden as users' computing environments grow more and more complex. Just how many help desks are able to implement new systems quickly and effectively remains to be seen.

"People are making the buying decisions for help desk tools are not so much to their eyeballs with real problems and real people, which makes researching what is available a catch-as-catch-can process," says Merra Lee Moffit, president of Knowledge Networks, a San Jose, Calif.-based consultancy. What may prove even more problematic, she says, are the budget constraints many help desks face.

Generally speaking, Moffit says, "support organizations are low on the food chain at most companies."

Software Support Professionals' Rose agrees: "One of help desks' biggest challenges is funding," he says. "Their lot in life is to put out fires, but they have no money." ■

Call in the expert? Not always the best idea.

When you are answering more than 500 calls a day from thousands of employees on the front lines at point-of-sales equipment in 1,700 retail stores and catalog centers, speed is of the essence.

But speed is precisely what JC Penney Co.'s customized expert system-based help desk lacked. As new user problems crept up, it would often take as long as two weeks for application programmers to "build" much-needed solutions using the advanced technology. Then there was

support manager.

"With Apriori, we don't need a programmer or a super technician to build documents for our database," she adds. Rather, as calls are logged in, the Apriori system — knowledge-based as opposed to expert systems-based technology — creates a central, indexed library of problem management information, which can be referenced by help desk operators in the future.

Not for everyone

Cases such as JC Penney's are prompting new questions about the practicality of expert systems technology.

"A lot of organizations see expert systems as a way to kind of panacea and think it will solve all of their problems," notes David Kuches, president of Systems Management Engineering, Inc., a Tampa, Fla.-based consultancy. "But expert systems require a fair amount of effort and expertise. If not developed in a very structured way, what a help desk ends up with is a lot of spaghetti," he says.

Expert system technology is also expensive because of the expertise required to write the code, says Bill Rose, director of the San Diego-based Software Support Professionals Association. Moreover, Rose notes that true experts are hard to find.

The most compelling reason for limited use of expert systems technology at the help desk is that in the vast majority of cases, an expert system is not what is needed.

"Perhaps only 10% of calls coming in to the help desk require some kind of expert to answer them," Rose says. The other 90% have to do with the usability of the technology, he says.

JULIA KING

also the cost associated with employing highly-skilled technicians to construct a problem management database.

So, early last year, JC Penney scrapped the custom solution. In its place, the company installed Answer Computer, Inc.'s Apriori knowledge-based call and problem management module.

"The biggest problem with the expert system was the time it took and the skill level of the person you needed to use it," explains Karen Shulestad, store systems

Selecting the right tools

Whether you buy software off the shelf, mix and match elements of several packages or build your own system in-house, experts say you should consider the following criteria for help desk tools:

► Ease of use. If logging a call is difficult or time-consuming, operators won't do it. Menus and call-up tables prompting the operator for user specifications, such as name and equipment configuration, are especially useful. Also important is the ability to perform key-word searches of problem management databases.

Some products will automatically pop up a screen of the caller's configuration data and call histories. Many allow the operator to choose items from a menu when logging a call rather than typing in problem logon. This is called "quick entry."

► Customizability. No matter how carefully you select a help desk system, no package can meet your every need. Make sure you can easily customize it as well as mix and match tools via standard or custom interfaces. Especially important is whether you can import and export data from homegrown problem management databases and other in-place systems.

► Training and support. Operators should be able to give immediate responses without needing to pass along questions to other help desk personnel. To check into the level of training and support provided, ask specific questions such as the following: Is support available around the clock? Is training included as part of a product's purchase price, or is it additional?

JULIA KING

Costs are high but doable

Expenditure depends on help desk size, degree of automation

BY DAVID KUCHES

Automating your help desk won't be inexpensive. There are ways to control costs, such as being choosy about which portions of the process you automate and purchasing basic software instead of enhanced packages.

And you shouldn't find it difficult to justify the expense, considering that the benefits include decreasing the amount of time it takes to handle a call, increasing the number of calls handled by each help desk representative and improving the ability to report on the various types of problems.

Depending on the size of your help desk, you can expect to spend the following:

- Roughly \$50,000 for a small help desk with no few technicians handling fewer than thousand calls per month.

- \$200,000 to \$300,000 for a medium-size help desk with roughly 6 to 12 staff members handling 3,000 to 5,000 calls.

- \$500,000 or more for a large help desk with dozens of support representatives handling over 5,000 calls per month.

Those figures include a number of costs, such as the initial purchase price for the software and hardware, the customization and the training. These can vary in the following ways:

► Number of users you need to support.

The larger the user base, the more support personnel you'll need and the more sophisticated your support systems will need to be.

► How much you want to automate.

Tools range from basic personal computer software packages for logging, tracking and answering user queries to sophisticated expert- or knowledge-based systems (see story page 65).

Theoretically, your operators could log and track incoming phone calls manually. In this case, your costs will depend on the number of help desk staff members required to handle those calls. However, most organizations find that it is easier and faster to use call logging and tracking software.

Call logging and tracking software packages range in price from approximately \$2,000 for a basic single-user, PC-based system to about \$200,000 for a mainframe-based multi-user system with enhancements such as automatic call escalation and notification, interface capability to other complementary products and expert systems support.

On average, you can expect to invest about \$50,000 for a call logging and tracking package, either PC-based or mainframe-based, to handle most of your help desk's needs.

If your help desk budget allows for more than just the basics, you can pur-

chase add-on help desk tools such as automatic call distributors (ACD) and voice response units (VRU). ACDs start at about \$20,000 to basic call-routing among a couple of agents. You can add to the hundreds of thousands of dollars range as you need to support dozens of agents and want advanced capabilities such as text-to-speech and integrated image processing.

The same is true for VRUs, which start at about \$15,000 and can cost as much as \$100,000, depending on the system complexity and size of the organization.

► Customizations. The initial price tag is only part of the cost equation. Even though most packages can be installed as is, many organizations like to customize them to suit their needs. This can be done in-house or with a consultant.

Workstation environment:	\$5,000 - \$10,000 (per representative, including PC or terminal, operating system, printer, etc.)
Call-logging software:	\$5,000 - \$50,000 (PC LAN)
Automatic call distributor:	\$20,000 - \$500,000
Voice response units:	\$15,000 - \$100,000
Consulting services:	\$50 - \$120 (per hour) (Could total \$10,000 - \$200,000)

SOURCE: David Kuches

Consulting services can range from a low of \$50 an hour to \$120 an hour. You can expect to spend at least 200 hours implementing any of the packages. The cost to accomplish the same thing in-house is probably more like \$20 to \$30 an hour (the average hourly rate of an employee), but keep in mind that you still need to account for training and the possibility of a longer development and/or implementation time frame because of lack of experience.

► Training. You need to not only train help on the newly implemented technology but also enlighten data processing personnel, especially when you've installed a global call logging and problem reporting system.

The bottom line is that in order to achieve the benefits of a help desk, you must invest in automated help desk tools that allow the help desk to do its job right.

If this is achieved, IS will be contributing not only to its own bottom line but also to the bottom line of the business enterprise.

Kuches is an independent consultant based in Tampa, Florida, who specializes in help desk functions and related technology.

No more playing around on Nintendo's help desk

BY LUCIE JUNEAU

It was the old "we must have lost your form" story. And it was getting pretty old.

Up until a year ago, help desk staff members at Nintendo of America, Inc. would record calls on a paper form and later enter them into a spreadsheet, says Cynthia Wilson, data processing operations manager at the Redmond, Wash.-based computer game manufacturer.

When a problem was too complex to be handled by front-line help desk personnel (which happened 25% of the time), the paper form would be sent to a more experienced IS staffer, who would hopefully field the call, fill out the form and hand it back to the help desk.

"We were trying to be systematic, but it wasn't timely at all," Wilson says. "We would end up with tons of backlogged paperwork ... and a lot of problems got lost."

That wasn't the only problem. Because they didn't have easy access to accurate historical data, staff members wasted time repeatedly attending to the same problems rather than resolving them once and for all, Wilson says.

Time to automate

Certainly, automation was in order. After overseeing a five-month product evaluation process, Wilson selected Heat:Helpdesk Expert Automation Tool from Bendata Management Systems, Inc. in Colorado Springs.

Nintendo's shop includes seven IBM Application System/400 minicomputers and about 1,000 IBM-compatible personal computers linked to Novell, Inc. networks. Because there were very few AS/400 help desks available at the time, Nintendo's product evaluation team was still best limited to PC-based solutions, Wilson says. The search was further narrowed to DOS-based products because an OS/2 or Unix-based package would have presented a longer learning curve, she says.



Nintendo's Wilson: "We were trying to be systematic, but it wasn't timely at all. We would end up with tons of backlogged paperwork... and a lot of problems got lost."

The evaluation team had a few basic requirements. It was looking for a product that would be easy to use, robust and easy to customize. "We wanted something we could quickly get information into so we wouldn't need to keep customers on the phone a long time," Wilson says. Guide, a Chicago-based Owl International, Inc. in Bellevue, Wash., was the system that didn't show up because it required a programmer to actually use it, and Wilson's staff members aren't professional programmers.

Some products just weren't very robust, Wilson says. In the process of test-

ing one company's solution, which required a dedicated machine, she found it difficult to keep the application up and running. "The engine would lock up and die," Wilson says. Bendata's Heat runs off of a PC file server and doesn't require a separate engine, she adds.

The help desk needs a product whose screens could be customized. It reported one of the best configurations because the product didn't meet that need, Wilson says. "We have unique information that we wanted to enter about our customers. We needed fields for AS/400 connections, line IDs, what ports they were connected

to — a lot of information on wiring," Wilson says.

In addition to serving 1,500 users at Nintendo's Redmond site, the help desk serves 120 Nintendo employees working at retail sites and two remote sites: one in North Bend, Ind., and another in Canada. It fields between 1,000 and 3,000 calls per month, depending on seasonal fluctuations, Wilson says.

Most calls to Nintendo's help desk are easy to address. A user might need help resetting a password or have questions about the use of WordPerfect Corp.'s WordPerfect word processing software or Microsoft Corp.'s Excel spreadsheet, Wilson says. Occasionally, a user might call the help desk because a PC has dropped off-line. Typically, a wiring problem is to blame, Wilson says.

Working together

Having an automated system has also made it much easier for the help desk to interface with second-tier personnel. Now, help desk personnel can electronically forward calls requiring second-tier assistance.

Although an expert system capability wasn't among Wilson's requirements, Heat does allow users to build their own expert systems. Nintendo is in the beginning stages of what Wilson estimates will be a five-month effort to build its system. The customized system will include features such as graphics capabilities so that a tech-dept representative can pull up pictures of equipment when trying to solve a problem. Representatives will also be able to search for problems by key words to show how previous problems were resolved.

The effort will complement a move to upgrade the help desk by assigning each help desk staff member a specialty area, such as hardware or software, Wilson says. The use of expert systems along with the move toward specialization, should allow the help desk to cut the number of calls passed to second-tier staffers to about 10% of the total, she adds. *

If you need to fix a repetitive problem, please press 1 . . .

BY LUCIE JUNEAU

Last fall, the help desk staff at Schering-Plough Corp. hit upon one of the newest tools in the help desk market: voice response technology.

After reviewing its operations, the Memphis-based pharmaceutical company's help desk determined that about 40% of its calls were repetitive problems and could be addressed by a voice response unit (VRU).

"We kept hearing voice technology was good at handling repetitive problems," says Judy Tiller, manager of corporate support services at Schering-Plough.

After evaluating the available products, Schering-Plough's help desk selected RobotOperator System, a VRU from Dallas-based Interface, Inc. The product seemed easier to program and more flexible than other VRUs on the market,

Tiller says. "We felt that it would make it easier for us to add more functions."

Schering-Plough's shop includes an IBM Enterprise System/9000 mainframe, several IBM Application System/400 minicomputers, several Digital Corp. mini-computers and some Hewlett-Packard Co. mainframes, Tiller says. Most of her help desk clients use IBM-compatible personal computers emulating ES/9000 terminals.

All calls to the help desk are routed through the RobotOperator. The VRU leads the caller through the process of selecting remote job-entry lines and canceling terminal sessions and user identifications. Tiller says. Callers can also call the VRU for a live update on system status or to check on the status of a problem that was previously reported.

The caller moves through the VRU's menu of options by making the appropri-

ate selections on his telephone keypad. If the VRU can't resolve a problem, the system will transfer the call to one of the help desk's four systems analysts. This also occurs if all the VRU lines are busy or if the caller prefers to talk with a member of the help desk staff.

Quicker solutions

Tiller sees a lot of benefits to the RobotOperator, which just recently came online. The VRU will allow the help desk operators to respond to problems more quickly and will free the staff to focus on more complex user problems, "which aren't always 1, 2, 3 and then you're through," Tiller says.

"It will give us the chance to expand our skills," she adds. With increased knowledge and time to focus on more complex issues, the staff will handle many of the calls that it has traditionally passed along to second-level, non-help-desk information systems personnel.

RobotOperator's logging feature will also help the help desk to access users' historical information for determining educational and hardware needs. The help desk will also be able to determine if

there are other straightforward, frequent user problems that RobotOperator could resolve.

Tiller predicts that the help desk will eventually be able to serve almost 2,000 calls per month after it is centralized later this year. That's almost double the amount of calls the desk was able to handle before the VRU.

In addition to the VRU, Schering-Plough's help desk makes use of a problem management software package that will eventually be tied to a DB2 database to track calls, Tiller says. This software keeps track of when each call came in, which analyst took care of it and whether it has been resolved. The VRU is tied into this software so that the company can track calls coming into its voice response system as well as calls that are handled by its analysts, Tiller says.

So far, the only downside to the technology has been that, because of the amount of programming required by Schering-Plough's applications, it has taken about six months — at least twice as long as expected — to get the VRU up and running. "I would advise others to pad their expectations," Tiller says.

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Tulsa plans ahead for LAN-slide of questions

BY LUCIE JUNEAU

Take a customer base that's expected to grow almost 35% by 1993. Add plans to network that customer base within the same time period, and you end up with one very stressed help desk — unless you provide the right tools.

In Tulsa, Okla.'s public works department, there are currently about 150 personal computers with standard computer support, with about one-sixth of those users on a local-area network. By next year, 200 users will be on PCs, and by 1994, most will be on a LAN, says David Axson, computer support analyst and supervisor of Tulsa's computer support group.

To plan for that day, Tulsa's

for replacing some of the city's older IBM-compatible PCs as well as some nonstandard close equipment by using statistics collected and organized with the HelpDesk product, Axson says.

Tulsa's four-person support group currently responds to 10 to 12 calls per day from PC users

in 13 buildings scattered over 50 miles in the Greater Tulsa area. Until now, one staff member has been responsible for fielding most user questions and entering data into HelpDesk, which has been installed on a stand-alone PC.

That made ease of use a key

feature that sold Axson's group on HelpDesk. Axson says HelpDesk minimizes the number of problems that the primary operator, who was not technically trained, had to pass along to her colleagues. For example, the configuration information available for each user helps the oper-

ator pinpoint problems.

The city of Tulsa is now in the process of putting its HelpDesk system on a network server. That means the computer support group's four staffers will be able to use the product simultaneously and share the help desk's work load.

Juneau is a free-lance writer and editor based in Somers, Mass.

Some printers get all the breaks.



Axon anticipates easier network implementation with an automated help desk

computer support group went shopping for a help desk package that could help resolve user problems, run either a stand-alone or networked PC, manage inventory and provide strong reporting features, Axson says.

Because the computer support group is moving from stand-alone to networked PCs, it needed a product that could make that transition. "We were looking for a stand-alone DOS package that would eventually have the capability of working in a LAN environment when we got to that point," Axson says.

About a year ago, after viewing several product demonstrations, Axson's group selected HelpDesk from Upper Montclair, N.J.-based Coastal Technologies. The product helps organize help desk activities by priority and follow-up date. It also maintains a profile of each caller — including the caller's PC configuration and information about previous calls.

The product's reporting capabilities help the support group assess how it spends its time. Axson says, Users can also create reports in various formats. Because the staff has been able to access and format data in relation to calls, the group has succeeded in identifying chronic problems. It has also made a case

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Help desk call-logging, call-tracking software

VENOR	PRODUCT	HARDWARE PLATFORM SUPPORTED	OPERATING SYSTEM SUPPORTED	TYPE OF PRODUCT	MINIMUM MEMORY/INTERNAL HARD DISK (BYTES REQUIRED)	EXPERT SYSTEM CAPABILITY*	KNOWLEDGE-BASED SYSTEM	CALL MANAGEMENT CAPABILITIES	PROBLEM MANAGEMENT CAPABILITIES	REPORTING FEATURES	INTERFACE TO VOICE RESPONSE SYSTEM	LANGUAGE USED TO CODE THE SYSTEM	DATABASES INCLUDED/SUPPORTED	LAN SUPPORTED	USER INTERFACES	PRICE
All Corp. 617/591-6660	ServiceMaster	IBM PCs and compatibles, DEC VME, Sun	Motorsola OS, DEC RT10, Sun OS	Network-based help desk management system	8MHz, 1MB	No	Quick service ports, batch log-in, client server architecture, multiple users, multiple-user search methods	Search/retrieval, fast batch log-in, client server architecture, multiple users, multiple-user search methods	Detail, summary, ad hoc, graphical	Yes	CGWS	Oracle, Sybase, DB2, RDB, MySQL, Informix, Oracle, DEC, Sybase, PL/SQL, Visual Basic	Any LAN/DBP	LanTalk	Full-disk menu, per-call reporting, select data entry, report generation, user-defined reports	\$1,000-\$10,000, depending on size
Allstar Systems Group, Inc. 619/452-6500 800/933-6500	Expert 2.0	IBM Workstation	MVS	Stand-alone	32MHz/16M	No	Quick service ports, batch log-in, client server architecture, multiple users, multiple-user search methods	Search/retrieval, fast batch log-in, client server architecture, multiple users, multiple-user search methods	Detail, summary, ad hoc, graphical, report generation, multiple users, multiple-user search methods	No	CGWS	IBM terminal emulators	Custom-written, Help, menu-driven	Custom-written, Help, menu-driven	\$10,000-\$100,000, depending on size	
Amesoft Information Systems, Inc. 619/499-4300	Amesoft CallCenter	Client-based	OS/2 Systems, V. Windows 3	Stand-alone	Configurable, through network or direct connection	Yes	Quick service ports, batch log-in to client server architecture, multiple users, multiple-user search methods	Search/retrieval, fast batch log-in to client server architecture, multiple users, multiple-user search methods	Summary, ad hoc, graphical, report generation, multiple users, multiple-user search methods	No	C	Informix, TCP/IP	Full-disk menu, per-call reporting, select data entry, report generation, user-defined reports, user-selectable fields	Full-disk menu, per-call reporting, select data entry, report generation, user-defined reports, user-selectable fields, user-selectable fields	\$60,000, starting price	
Amesoft Computer, Inc. 1449/770-0120 800/677-2070	Agent	User-based workstations, DEC 3000, 4000, 5000, 6000, 7000, 8000, 9000, 10000, 11000, 12000, 13000, 14000, 15000, 16000, 17000, 18000, 19000, 20000, 21000, 22000, 23000, 24000, 25000, 26000, 27000, 28000, 29000, 30000, 31000, 32000, 33000, 34000, 35000, 36000, 37000, 38000, 39000, 40000, 41000, 42000, 43000, 44000, 45000, 46000, 47000, 48000, 49000, 50000, 51000, 52000, 53000, 54000, 55000, 56000, 57000, 58000, 59000, 60000, 61000, 62000, 63000, 64000, 65000, 66000, 67000, 68000, 69000, 70000, 71000, 72000, 73000, 74000, 75000, 76000, 77000, 78000, 79000, 80000, 81000, 82000, 83000, 84000, 85000, 86000, 87000, 88000, 89000, 90000, 91000, 92000, 93000, 94000, 95000, 96000, 97000, 98000, 99000, 100000, 101000, 102000, 103000, 104000, 105000, 106000, 107000, 108000, 109000, 110000, 111000, 112000, 113000, 114000, 115000, 116000, 117000, 118000, 119000, 120000, 121000, 122000, 123000, 124000, 125000, 126000, 127000, 128000, 129000, 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THE WELL-EQUIPPED HELP DESK

PRODUCT SPOTLIGHT

VENDOR	PRODUCT	HARDWARE PLATFORM SUPPORTED	OPERATING SYSTEM SUPPORTED	TYPE OF PRODUCT	MINIMUM MEMORY/NUMBER OF HARD DISK (P/TB) RECOMMENDED	EXPERT SYSTEM CAPABILITIES ¹	KNOWLEDGE-BASED SYSTEM ²	CALL MANAGEMENT CAPABILITIES	PROBLEM MANAGEMENT CAPABILITIES	REPORTING FEATURES	INTERFACE TO VOICE RESPONSE SYSTEM	LANGUAGE USED TO CODE THE SYSTEM	DATABASES INCLUDED/REPORTED	LAN SUPPORTED	USER INTERFACES ³	PRICE
Corporate Software, Inc. (415) 658-7727 Ext. 1247	Quattro Software	IBM PCs and compatibles	DOS 3.2 or later	Stand-alone	386/286/387 server	No	No	Quotient entry path, linkage to client manager, automatic configuration, maintenance information, monitoring of resources	Search/retrieve, key word searching, automatic tracking, maintenance information, monitoring of resources	Detail, summaries, or bin, graphical	No	Clipper 3.1, others	DB2, Oracle, any DBMS-compatible LAN, any DBMS-compatible network, various management systems	Pop-up dialog boxes, print-and-select, direct access, mouse, various configuration options	\$8,000 (\$4,000 add'l), \$12,000 (\$6,000 add'l), \$18,000 (\$9,000 add'l)	
Enhanced Software Products, Inc. (415) 338-3848	ESP-GLS	Macintosh	Macintosh	Stand-alone	NA/NA	No	No	Quotient entry path, linkage to client manager, key word searching, automatic tracking, maintenance information, monitoring of resources	Search/retrieve, key word searching, automatic tracking, maintenance information, monitoring of resources	Detail, summaries, or bin	No	None	NA	User configuration	\$8,000, plus license	
Executive Technology Partners, Inc. (415) 866-3200	Urgo	IBM PCs and compatibles	Windows 3.0	LAN-based system	486/386	No	No	Quotient entry path, linkage to client manager, key word searching, automatic tracking, maintenance information, monitoring of resources, client inventory	Search/retrieve, key word searching, automatic tracking, maintenance information, monitoring of resources, client history search, client history reporting	Detail, summaries, or bin, graphical, ASCII report	No	C	C true plus	DB2, Oracle, any DBMS-compatible LAN	Push-down menu, pop-up dialog boxes, print-and-select, direct access, mouse, various configuration options	\$1,700, \$2,000, depending on number of work stations and modules
ESRI (800) 426-3333	Feature Analyst/Polymer Analyst (FAP)	PC/AT and compatibles	DOS 3.2	Front-end to client-based system	16MHz 486/386 (4MB RAM, 10MB hard disk, 1.44MB floppy)	Decentralized	No	Quotient entry path, linkage to client manager, key word searching, automatic tracking, maintenance information, monitoring of resources, client history	Search/retrieve, key word searching, automatic tracking, maintenance information, monitoring of resources, client history	Detail, summaries, or bin, graphical, hypermedia	No	C, Visual Basic, Microsoft Language 1	DB2, Oracle, Visual Basic	Pop-up dialog boxes, print-and-select, direct access, mouse, various configuration options	\$2,000, \$2,500, depending on number of work stations and modules	
Inforbase Corp. (319) 352-6200	CRM Express L1	IBM PCs and compatibles	Windows 3.0	Stand-alone (via PC LAN and expert level)	486/386	Yes	No	Quotient entry path, linkage to client manager, key word searching	Search/retrieve, key word searching, all file formats, trouble shooting, automatic tracking and presentation	Detail, summaries	Yes	C	DB Vista	DB2, Oracle, any DBMS-compatible LAN	Push-down menu, pop-up dialog boxes, print-and-select, direct access, mouse, various configuration options	\$1,395, \$1,795, depending on number of work stations and modules
Information Management Corporation, Inc. (312) 730-7387 (800) 479-7785	Prologue Information Manager (PIM)	IBM AS/400 or larger	MVS/VM/ESA/RS/VS	Stand-alone, stand-alone (managed)	NA/NA	Yes	No	Quotient entry path, linkage to client manager, key word searching, automatic tracking, maintenance information, monitoring of resources, trouble shooting, products to handle user recall	Search/retrieve, key word searching, all file formats, trouble shooting, automatic tracking and presentation	Detail, summaries, or bin, graphical	Yes	PL/I, Assembler	Information management	DB2, Oracle, any DBMS-compatible LAN	Alerted every 10 minutes, user configurable menus	\$37,000-\$45,000
InterAccess, Inc. (319) 374-4125	Dimension	IBM PCs and compatibles, any workstation, any client-based system, Windows 3.0, 2.1	DOS 3.2 or later, Windows 3.0	Stand-alone	386/286/387	Yes	No	Quotient entry path, linkage to client manager, key word searching, automatic tracking, maintenance information, monitoring of resources, trouble shooting, component, change, personnel features	Search/retrieve, key word searching, all file formats, trouble shooting, automatic tracking and presentation	Detail, summaries, or bin, graphical	Yes	Basic/C	Oracle, Sybase, Coda, DB2, Visual Basic	Push-down menu, pop-up dialog boxes, print-and-select, direct access, mouse, various configuration options	\$1,995, depending on number of work stations and modules	
Magix Software, Inc. (311) 520-5533	Expert-Magix	IBM PCs and compatibles, LAN/OS-based LAN	DOS 3.2 or later, Windows 3.0	Stand-alone	486/286/387	Yes	No	Quotient entry path, linkage to client manager, key word searching, automatic tracking, maintenance information, monitoring of resources, trouble shooting, configuration tools	Search/retrieve, key word searching, all file formats, trouble shooting, automatic tracking and presentation	Detail, summaries, or bin, graphical	No	C	Browser	DB2, Oracle, any DBMS-compatible LAN	Push-down menu, pop-up dialog boxes, print-and-select, direct access, mouse, various configuration options	\$2,995
MCIS, Inc. (1414) 788-6500 (800) 543-2330	QuorumPlus	IBM PCs and compatibles, Unix, VME, VMEbus, VMEbus, DEC VME, Sun, SGI, Macintosh	DOS 3.2 or later, OS/2, VME, VMEbus	Stand-alone	386/286/387	Yes	No	Quotient entry path, linkage to client manager, key word searching, automatic tracking, maintenance information, monitoring of resources, trouble shooting, configuration tools	Search/retrieve, key word searching, all file formats, trouble shooting, automatic tracking and presentation	Detail, summaries, or bin, graphical, hypermedia	No	Unknown	PL/I	Oracle, Sybase, Informix, DB2	Push-down menu, pop-up dialog boxes, print-and-select, direct access, mouse, various configuration options	\$20,000 and up (dependent)
NET Computer Company, Inc. (415) 243-3307	Net-2-You	IBM PCs and compatibles	DOS, Windows 3.0	Stand-alone product	386/286/387	No	No	Quotient entry path, linkage to client manager, key word searching, automatic tracking, maintenance information	Search/retrieve, key word searching, all file formats, trouble shooting, automatic tracking and presentation	Detail, summaries, or bin, graphical	No	Novell NetWare, Novell NetWare, others	Any Novell-compatible LAN	Push-down menu, pop-up dialog boxes, print-and-select, direct access, mouse, various configuration options	\$45,000	
Network Software Solutions Corp. (415) 483-0877	Right Tracker	IBM PCs and compatibles	MVS	Stand-alone	486/386	No	No	Linkage to client manager, key word searching, automatic tracking, maintenance information	Search/retrieve, key word searching, all file formats, trouble shooting, automatic tracking and presentation	Detail, summaries	No	C	None	DB2, Oracle, any DBMS-compatible LAN, LAN Manager	Push-down menu, pop-up dialog boxes, print-and-select, direct access, mouse, various configuration options	\$10,000, starting price
Monolith Software Systems Corp. (314) 225-8844	Monolith Workstation Manager	IBM PCs and compatibles	Windows 3.0, 2.1	Stand-alone	386/286	No	No	Linkage to client manager, key word searching, automatic tracking, maintenance information	Search/retrieve, key word searching, all file formats, trouble shooting, automatic tracking and presentation	Detail, summaries, or bin, graphical	No	C	None	DB2, Oracle, any DBMS-compatible LAN	Push-down menu, pop-up dialog boxes, print-and-select, direct access, mouse, various configuration options	\$10,000, starting price
Paragon Systems, Inc. (319) 431-5400	PHYS	Client-based, server-based, LAN-based, Sun, SPARC, RPX, VME, VMEbus, IBM Workstation, Parallel	DP-128, PTC-Dynix, PTC-AIX, AIX	Front-end to client-based, stand-alone	386/286/387	Yes	No	Quotient entry path, linkage to client manager, key word searching, automatic tracking, maintenance information, monitoring of resources, trouble shooting, E-mail	Search/retrieve, key word searching, all file formats, trouble shooting, automatic tracking and presentation	Detail, summaries, or bin, graphical	No	C	DB2, Progress 4GL	DB2, Oracle, any DBMS-compatible LAN	Push-down menu, pop-up dialog boxes, print-and-select, direct access, mouse, various configuration options	\$10,000, starting price

THE WELL-EQUIPPED HELP DESK

VENDOR	PRODUCT	HARDWARE PLATFORM SUPPORTED	OPERATING SYSTEM SUPPORTED	TYPE OF PRODUCT	MINIMUM MEMORY/NUMBER HARD DISK (BITS REQUIRED)	EXPERT SYSTEM CAPABILITIES	INFORMATION-BASED SYSTEM ¹	CALL MANAGEMENT CAPABILITIES	PROBLEM MANAGEMENT CAPABILITIES	REPORTING FEATURES	INTERFACE TO VOICE RESPONSE SYSTEM	LANGUAGE USED TO CODE THE SYSTEM	DATABASES INCLUDED/SUPPORTED	LAN SUPPORTED	USER INTRUSION ²	PRICE
NUMBER OF WORKSTATIONS	NUMBER OF SERVERS															
Galaxy Corp. (415) 912-2800	Customer Q	Stand-alone Networked Workstation	OS/2, DOS, Windows 3.1, Windows 3.0	Computer Network	16MB/40MB	Router-based switched network	No	Linkage to client, multiple workstations, multiple databases, multiple servers, multiple protocols	Search, retrieval, multiple databases, multiple protocols	Detail, Summary, ad hoc reporting	Order, C, Visual Basic, PowerBuilder	Informix, Sybase, Oracle, DB2, Informix Universal Server, Oracle Universal Server, Sybase Universal Server	DB2, Sybase Universal Server, Oracle Universal Server, Informix Universal Server	Full-disk access to databases, full disk access to files, multiple protocols, multiple databases, multiple servers	\$24,000-\$ \$28,000	
Bendix Corp. (415) 982-5300	Active Response System	Stand-based workstations	OS/2 3.1	Stand-alone	32MB/128MB	None	No	Linkage to client, multiple workstations, multiple databases, multiple protocols	Search, retrieval, multiple databases, multiple protocols	Detail, Summary, ad hoc reporting	Order, C, Visual Basic, PowerBuilder	Informix, Sybase, Oracle, DB2, Informix Universal Server, Oracle Universal Server, Sybase Universal Server	Full-disk access to databases, full disk access to files, multiple protocols, multiple databases, multiple servers	\$1,000		
IBM Industries, Inc. (404) 977-0000	The 5400 System	IBM VME workstations	MVS	Front-end to multiple server systems	81.0MB/160MB	None	No	Quick entry of problems, multiple databases, multiple protocols	Search, retrieval, multiple databases, multiple protocols	Detail, Summary, ad hoc reporting	Order, C, Visual Basic, PowerBuilder	Informix, Sybase, Oracle, DB2, Informix Universal Server, Oracle Universal Server, Sybase Universal Server	Full-disk access to databases, full disk access to files, multiple protocols, multiple databases, multiple servers	\$24,000-\$ \$28,000		
Service Point Development Corp. (800) 272-0800	ServicePoint 2.1	IBM PCs and compatibles	DOS 3.2 or later, Windows 3.0, Windows 3.1, Windows 3.0 or later	Stand-alone	4MB/128MB	OS/2 (very light integrated)	No	Quick entry of problems, linkage to client, multiple workstations, multiple databases, multiple protocols	Search, retrieval, multiple databases, multiple protocols	Detail, Summary, ad hoc reporting, multiple protocols	Order, C, Visual Basic, PowerBuilder	Informix, Sybase, Oracle, DB2, Informix Universal Server, Oracle Universal Server, Sybase Universal Server	Full-disk access to databases, full disk access to files, multiple protocols, multiple databases, multiple servers	\$20,000-\$ \$21,000		
Software Analytics, Inc. (317) 296-3842	Expert Advisor	IBM PCs and compatibles, multiple workstations	DOS 3.2 or later, OS/2, Windows 3.0	Stand-alone	32MB/160MB	None	No	Quick entry of problems, linkage to client, multiple workstations, multiple databases, multiple protocols	Search, retrieval, multiple databases, multiple protocols	Detail, Summary, ad hoc reporting	Order, C, Visual Basic, PowerBuilder	Informix, Sybase, Oracle, DB2, Informix Universal Server, Oracle Universal Server, Sybase Universal Server	Full-disk access to databases, full disk access to files, multiple protocols, multiple databases, multiple servers	\$12,000-\$ \$13,000		
Software Engineering Associates, Inc. (314) 961-2000	Key	IBM 3101/3201 Multiprocessors	MVS/32/64/ VME	Stand-alone	NA/NA	None	No	Quick entry of problems, linkage to client, multiple workstations, multiple databases, multiple protocols	Search, retrieval, multiple databases, multiple protocols	Detail, Summary, ad hoc reporting	Order, C, Visual Basic, PowerBuilder	Informix, Sybase, Oracle, DB2, Informix Universal Server, Oracle Universal Server, Sybase Universal Server	Full-disk access to databases, full disk access to files, multiple protocols, multiple databases, multiple servers	\$12,000-\$ \$13,000		
Software Marketing Group, Inc. (312) 976-6200	Help Express Express	IBM PCs and compatibles	DOS 3.2 or later, Windows 3.0	Stand-alone Networked Workstation	128MB/128MB (Help Express) 128MB/128MB (Report Express)	None	Yes	Quick entry of problems, linkage to client, multiple workstations, multiple databases, multiple protocols	Search, retrieval, multiple databases, multiple protocols	Detail, Summary, ad hoc reporting	Order, C, Visual Basic, PowerBuilder	Informix, Sybase, Oracle, DB2, Informix Universal Server, Oracle Universal Server, Sybase Universal Server	Full-disk access to databases, full disk access to files, multiple protocols, multiple databases, multiple servers	\$11,000-\$ \$12,000		
Through Microprocess Corp. (800) 344-5221	Call-By-Cloud System (CBS)	IBM PCs and compatibles	DOS	Stand-alone	32MB/128MB	None	No	Quick entry of problems, linkage to client, multiple workstations, multiple databases, multiple protocols	Search, retrieval, multiple databases, multiple protocols	Detail, Summary, ad hoc reporting	Order, C, Visual Basic, PowerBuilder	Informix, Sybase, Oracle, DB2, Informix Universal Server, Oracle Universal Server, Sybase Universal Server	Full-disk access to databases, full disk access to files, multiple protocols, multiple databases, multiple servers	\$10,000-\$ \$11,000		
Target Corp. (800) 469-0500	Target Doctor	IBM VME	Stand-alone	NA/NA	None	OS/2 (very light integrated)	No	Quick entry of problems, linkage to client, multiple workstations, multiple databases, multiple protocols	Search, retrieval, multiple databases, multiple protocols	Detail, Summary, ad hoc reporting	Order, C, Visual Basic, PowerBuilder	Informix, Sybase, Oracle, DB2, Informix Universal Server, Oracle Universal Server, Sybase Universal Server	Full-disk access to databases, full disk access to files, multiple protocols, multiple databases, multiple servers	\$10,000-\$ \$11,000		
The Valley Group, (301) 367-4664	Sys-Mind Version 2.0	IBM PCs and compatibles	DOS 3.2 or later	Stand-alone (PC LAN)	4MB/212MB	None, Windows (PC LAN)	No	Quick entry of problems, linkage to client, multiple workstations, multiple databases, multiple protocols	Search, retrieval, multiple databases, multiple protocols	Detail, Summary, ad hoc reporting	Order, C, Visual Basic, PowerBuilder	Informix, Sybase, Oracle, DB2, Informix Universal Server, Oracle Universal Server, Sybase Universal Server	Full-disk access to databases, full disk access to files, multiple protocols, multiple databases, multiple servers	\$12,000-\$ \$13,000		
Trigen & Software, Inc. (800) 276-7700	Service Doctor Version 2.0.1	AS400	Stand-alone	NA/NA	None	None	No	Quick entry of problems, multiple databases, multiple protocols	Search, retrieval, multiple databases, multiple protocols	Detail, Summary, ad hoc reporting	Order, C, Visual Basic, PowerBuilder	Informix, Sybase, Oracle, DB2, Informix Universal Server, Oracle Universal Server, Sybase Universal Server	Full-disk access to databases, full disk access to files, multiple protocols, multiple databases, multiple servers	\$12,000-\$ \$13,000		
Trident Software (415) 531-0100	Identify	IBM PCs and compatibles, Macintosh, IBM VME	DOS 3.0 or later, Windows 3.0, Windows 3.1, Windows 3.0	PC or PC-LAN	4MB/16MB	CMS- based (very light integrated)	No	Quick entry of problems, linkage to client, multiple workstations, multiple databases, multiple protocols	Search, retrieval, multiple databases, multiple protocols	Detail, Summary, ad hoc reporting	Order, C, Visual Basic, PowerBuilder	Informix, Sybase, Oracle, DB2, Informix Universal Server, Oracle Universal Server, Sybase Universal Server	Full-disk access to databases, full disk access to files, multiple protocols, multiple databases, multiple servers	\$11,000-\$ \$12,000		
Udi Communications Corp. (800) 662-7270	Tele-Intelligent Decision System	IBM PCs and compatibles, DOS/Windows Network	DOS 3.0 or later, Windows 3.0, Windows 3.1, Windows 3.0	Stand-alone Client/Server Network	4MB/16MB	Stand-alone Client/Server Network	No	Quick entry of problems, linkage to client, multiple workstations, multiple databases, multiple protocols	Search, retrieval, multiple databases, multiple protocols	Detail, Summary, ad hoc reporting	Order, C, Visual Basic, PowerBuilder	Informix, Sybase, Oracle, DB2, Informix Universal Server, Oracle Universal Server, Sybase Universal Server	Full-disk access to databases, full disk access to files, multiple protocols, multiple databases, multiple servers	\$12,000-\$ \$13,000		
Verity, Inc. (415) 940-7800	Tele-Intelligent Decision System	IBM PCs and compatibles, DOS/Windows Network	DOS 3.0 or later, Windows 3.0, Windows 3.1, Windows 3.0	Stand-alone Client/Server Network	4MB/16MB	Stand-alone Client/Server Network	No	Quick entry of problems, linkage to client, multiple workstations, multiple databases, multiple protocols	Search, retrieval, multiple databases, multiple protocols	Detail, Summary, ad hoc reporting	Order, C, Visual Basic, PowerBuilder	Informix, Sybase, Oracle, DB2, Informix Universal Server, Oracle Universal Server, Sybase Universal Server	Full-disk access to databases, full disk access to files, multiple protocols, multiple databases, multiple servers	\$12,000-\$ \$13,000		

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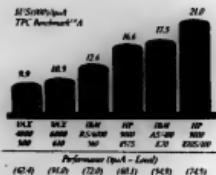
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IN DEPTH

Layoffs: The aftermath

Suspended projects. Increased stress. More work. Layoffs can leave devastation behind. Three organizations reveal their experiences.

BY MITCH BETTS
CW STAFF

For Steven Katzman, a senior systems programmer at a manufacturer in Bedford, Conn., massive layoffs in the information technology department have meant low morale, long stress and killer hours. Sometimes, he works 60 to 80 hours a week, for three weeks in a row with "no time anymore for standing up and stretching a little."

Katzman's experience at Associated Spring — a unit of Barnes Group, Inc. that cut its IS staff by 60% two years ago — is typical of the postlayoff stories told in IS departments across the nation. "We're having to work twice as hard," says a layoff survivor at Bank South Corp. in Atlanta who requested anonymity.

IS managers, rank-and-file employees and consultants agree that IS layoffs produce a heavier work load for the remaining employees, but they can also produce an IS organization that is better at setting priorities — out of necessity — for IS projects.

"There was a time when we could accomodate almost anything that came in here," says Allan K. Stern, director of management information services for the city of Boston. "We're not in that position now" because of a 24% staff cut, he says.

Managers such as Stern and Webb Edwards, the top IS executive at First Interstate Bancorp in Los Angeles, have come up with formal procedures for deciding which IS projects get immediate attention and which can wait. After huge layoffs at First Interstate, Edwards and business managers divided the applications backlog into three categories: must-do projects, projects that could be stretched out and projects that would just have to stay on the back burner.

Other companies have forged ahead with their full slate of IS projects, despite layoffs and perhaps at the risk of burning out their employees. "Deadlines are still being met, and no major projects have been canceled ... but everybody feels frazzled," says Christopher Chen-see, an analyst/programmer at Philadelphia-based Scott Paper Co., which has cut its IS staff 35%.

There is also a risk that layoffs will eventually hurt the software maintenance and quality assurance functions. "In a lot of ways, what you lose are the things that are, initially, invisible to the user departments," says H. Thaine Lyman, Midwest director of IS consulting at Deloitte & Touche in Chicago.

The cuts are made throughout the behind-the-scenes supporting cast, but "quite often those people are the only ones who understand how those older systems really work," Lyman says. The loss of that kind of knowledge is the biggest postlayoff problem at First Interstate, Edwards says.

"Not many of our shops in the 1980s were good at documentation. We had a lot of people that maintained a lot of that knowledge in their heads," Edwards explains. They may not have been the best performers, he says, but they knew how to tweak a particular piece of software or hardware to fix a problem.

Can't get no relief?

There apparently is not going to be much relief for IS, as many organizations continue to look at ways to trim expenses. Nationwide layoffs caused by the recession and corporate restructuring contributed to a 48,000-person drop in the number of computer programmers last year, according to the U.S. Bureau of Labor Statistics.

IS layoffs have been particularly heavy in the banking and defense industries, with no end in sight. For example, Chemical Banking Corp. plans to lay off 560 IS employees, and Lockheed Corp. plans to trim 250 from its al-

ready reduced IS staff.

Under this continuing wave of cutbacks, it is likely that only the strong organizations will survive. "The good [IS] organizations tend to get better, and the bad organizations tend to get worse" after layoffs, observes George Rausnak, head of the banking practice at CSC Index, Inc., an IS consultancy based in Cambridge, Mass.

Well-managed IS departments do not panic and cancel all development projects when the layoffs hit, he says, because they have planning and reallocation processes in place to help them adjust. These adjustment techniques include the following:

- Setting new priorities to reduce the demand for IS work.
- Farming out a resource-intensive portion of the operation.
- Upgrading development processes and tools to boost programmer productivity.
- Purchasing off-the-shelf software rather than building an application in-house.

"In a poorly managed organization, they typically tried to solve a problem by throwing bodies at it," Rausnak says. Faced with a reduced body count, these IS shops will find

Continued on page 76

Skills cut, no relief in sight
Many of the IT professionals surveyed say their skills are in demand, but they are worried about job security.

1. Increased work load.
2. Budgetary constraints.
3. Increasing demands on IS from business units.
4. Reductions in staff size.
5. Concern about job loss.

Source: Computerworld 1991 Job Satisfaction Survey



Mark Simon

IN DEPTH: LAYOFFS: THE AFTERMATH

Continued from page 75

themselves muddling through as under-achievers, or they will simply "blow up"; that is, management gets replaced or the whole operation is outsourced.

Because the survivors are typically overworked and stressed out, IS managers should undertake a program of "bureaucracy bashing" to relieve some of the pressure, advises Robert A. Zawacki, an IS personnel expert at the University of Colorado in Colorado Springs. That means eliminating unnecessary meetings, reports and layers of approval.

In fact, layoffs often produce a much flatter IS organization and give low-level employees more decision-making authority. "As we de-layer our organizations and cut out the middle layer of [middle] management, it's painful, but in the long run, it's healthy," Zawacki says.

What follows are profiles of three IS organizations that have experienced the trauma and opportunities that accompany major layoffs.

City of Boston

When it comes to budget cutting, taxpayers and politicians tend to spare teachers and police departments and slash anything that smacks of "administrative" services. At Boston City Hall, that means the budget for the IS department has been slashed in half, to \$5.3 million, during the last three years. The IS staff was cut from 125 to 95 during that period, and most of the office were closed so the staff didn't need so much space.

But the layoffs could have been much worse, says Alfus Stern, who as director of management information services decided to curtail hardware procurements substantially to save staff positions. "We have enough hardware in place, so we need to concentrate on making better use of it," he says. "We need people to support the applications. We're constantly being asked



John Radose
System administrator
City of Boston

"I'm married, and I have five children. I'm worried about layoffs."

to make changes on the fly."

The smaller IS staff has meant setting strict priorities for IS projects, separating the must-haves from the nice-to-haves.

Among budget items, the city agencies and IS determine which projects will get some of the scarce funding available. "You have to show a demonstrated cost savings, a public safety benefit or a potential loss if the project is not implemented," Stern explains. "Unless it meets those criteria, you can basically forget it."

Software maintenance is starting to suffer a little, too. Some change orders have had to wait awhile so the staff could deal with the mandatory jobs, such as a change in tax law that requires recalculations of tax bills, Stern says.

The layoffs have resulted in a flatter IS organization, with fewer middle managers in the decision-making process. "Some of the people who in the past needed a lot of direction now have to be trusted to make better decisions on their own," Stern says. "In these times, you find out how deep your talent goes."

The remaining IS work force has had to take on additional responsibilities and kiss specialization good-bye, says John Radose, a system administrator. Radose, for example, previously focused on running the department's Wang Laboratories Inc. mini-computers, but now he is also interacting with user departments to develop new personal computer-oriented applications and evaluate commercial software packages.

Radose says the stress of being under-

staffed — and fearing a new round of layoffs — is brutal. "I'm as frazzled and as nervous as you can get. I'm married, and I have five children. I'm worried about layoffs. I have no guarantee that I'm going to be here tomorrow. That's always in the back of your mind," he says.

However, looking at the positive side, Radose says he is also learning new skills that will be attractive if he does wind up looking for a new job.

Stern says he worries that more cutbacks will hurt the department's ability to handle mission-critical applications, such as those affecting public safety and the payroll for the 20,000 people who still work for the city of Boston.

His worries may not be allayed any time soon, however, because he says it is "very likely" that his department will see more layoffs this year. "We've taken a lot of hits here. You'd like to think that it suffices, but our revenue streams are quite precarious." — Mitch Betts

pany's corporate architecture and technology group, says the rules of the 1950s and '60s, when working for a big company meant security, have clearly changed. "There's no question that changes your view of yourself in the larger organization," Purcell says.

The hard facts are that even talent hasn't been a job saver at Baxter. "It was hard to reconcile the fact that this was a premier IS group being told to get rid of 20% of its staff," he says.

Everyone interviewed acknowledges that in the aftermath of the IS cuts there has been an increase in job stress. Because the layoff came at a time when Baxter's business units were fundamentally rethinking their markets and products, the smaller IS staff had to handle a greater number of requests for system and infrastructure changes.

Still, Purcell and Dierberg say, Baxter handled the layoffs in 1990 as well as could have been expected. Or, as Dierberg quips, "They got better at it over time."

"Getting it better" included doing things to keep people through the end of the year to give them time to consider their careers once the dust had settled," says Ervin Upshur, vice president of corporate information services. Among other actions, management conducted "get-together" meetings with employees and created financial incentives to keep key personnel on board.

While the situation hasn't been ideal, there have been positives that have come out of the decentralization and layoffs, IS staff members agree.

Even as some of the IS workload increased, some of it was eliminated. For instance, the formerly centralized function of local-area network and office automation installation and support has been farmed out. A packaged solution replaced an internal effort to revamp the firm's computer-integrated manufacturing systems.

Another major project, that of integrating Baxter's IS systems with those of American Hospital Supply Corp., which merged with Baxter in 1985, was stopped. Instead of trying to mesh the systems at the two companies, IS staff is choosing between the two for the best software, system or approach.

But even more important than these load lighteners is the fact that IS employees are more attuned now than they were before the layoffs to the needs and budgetary constraints of the businesses of which they are a part, according to Upshur.

Baxter International, Inc.



Baxter's Purcell:
Talent not a job server

Postlayoff cleanup

Consultants and IS executives provided the following tips for managing the postlayoff IS organization:

- Rewrite job descriptions and reorganize job functions to reflect the smaller staff and focus on the "competencies of the future."
- With fewer people, you must pay more attention to planning and resource allocation. Work with business managers to set priorities. Enhance your applications development tools and methodologies to boost productivity.
- Undertake a program of "bureaucracy bashing" to eliminate unnecessary meetings, reports and layers of approval.
- To compensate for the smaller supply of workers, reduce the demand for work. For example, outsource certain parts of the IS operation, undertake joint ventures and purchase commercial software rather than build it.

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IN DEPTH: LAYOFFS: THE AFTERMATH

The learning process apparently works in the other direction, too. Divisional executives who once asked only why IS projects took so long or cost so much have begun asking "much more intelligent and relevant questions," Upshur says. Some managers, for instance, wondered about overlaps between ASAP, Baxter's ground-breaking order entry system, and other Baxter products that used electronic data interchange (EDI) standards. The software underlying EDI and ASAP has since been unified and made interoperable.

The layoff chain in Baxter's IS staff is lower than it was after the restructuring in 1990, and 5% of the original 20% of IS positions cut have been restored by payroll, primarily in divisions, Upshur says. And the layoffs have had no ill effect on projects the company considers important to its future. For example, Purcell is involved in a plan to build a wide-area network to support Baxter's business units and future products. —*Ellis Becker*

First Interstate Bancorp

There's nothing like a 68% cut in your IS staff to make you focus on what's important and what's not.

Los Angeles-based First Interstate reduced its IS staff from 2,128 to 680 in the last three years, as it collected 11 data centers scattered across the West U.S. into two data centers in Tempe, Ariz., and Portland, Ore.

The bank, plagued by bad real estate loans in California, is undergoing a severe cost-cutting program while at the same time trying to evolve from a hedgehog of banks to a banking company with a common set of products marketed throughout its territory.

The consolidation slashed IS expenses by \$11.5 million a year, which is helping to put the bank's finances on a more even keel. It also gave Webb Edwards, the executive vice president in charge of the company's information services unit, the opportunity to reorganize the IS operation and focus it on bottom-line results.

Four tips for managing cuts

Manging layoffs can be as stressful as going through them. Here's some advice on how to handle layoffs properly:

- Tell the whole staff early and honestly what to expect. Provide a schedule for the layoffs. Recognize that productivity and morale will inevitably suffer in the short term.

Morale problems that affect work occur because most companies sneak up on employees and announce layoffs at the last possible minute. "That causes a tremendous amount of unrest, and it's unfair to the staff," says Michael R. Zucchini, CIO at Fleet/Norstar Financial Group, Inc.

Instead of last-minute layoff announcements, Zucchini's no-nonsense approach is to tell employees very, very early about layoffs; employees at Bank of New England, which Fleet/Norstar

Faced with the typical applications backlog and far fewer people, the IS department worked with the executive vice presidents of each line of business to set priorities. "We changed our culture," Edwards says, by allocating resources based on the potential revenue or cost savings of a particular project rather than on which requester had "the loudest voice."

Development projects that were deemed strategic or crucial to daily operations — such as building a common suite of deposit systems throughout the company — were designated Level A projects. "Those we did not let suffer," Edwards says, even if it meant short-term help from a third-party contractor.

Level B projects were considered necessary but could be spread out over time, such as computerized automated clearinghouse processes. The rest of the backlog gets attention only if there is time and money available, he says.

Since the layoffs and consolidation, the IS organization is not only much more centralized but also much flatter, Edwards says. "When you're keeping the most talented people in the organization, that's the time to push more [decision-making] authority down to lower levels."

For example, project managers who are two or three levels below Edwards now decide how many staff and contractor people should be put on a particular project.

Allowing the technology decisions to be made by the technicians is faster than having to "go up through the management ranks until you find a decision maker," says Wayne Melkjan, a systems development manager.

The post layoffs work load is substantially higher, Melkjan says, but that is partially offset by less bureaucracy and the new "feeling of ownership" over IS projects.

Edwards says the biggest organizational loss from the layoffs has been the loss of technical guru who had in-depth but undocumented knowledge of particular systems and how to fix them. When those gurus were laid off, people like Melkjan had to start learning the ins and outs of obscure systems to provide technical support.

In the midst of the layoffs and consol-

idation, had as much as 18 months' notice.

- Provide extensive outplacement assistance — not just lip service — as well as severance packages and, if necessary, psychological counseling.

- Avoid across-the-board, indiscriminate layoffs based solely on head count. Try to keep the most talented and productive workers with the skills you'll need in the future.

- One advantage to Fleet's 18-months' notice, Zucchini says, is that it gave management time to identify the most talented IS staff members at the acquired bank.

- Cut deeply the first time to avoid multiple waves of layoffs. After telling the survivors "you're our team," another round of layoffs destroys management's credibility.

A different beast

Hleet Norstar
Financial Group, Inc.

age the staff we have," he adds.

Last year, Fleet/Norstar eliminated 1,300 IS and back-office jobs by establishing a single set of application systems and eliminating more than a dozen data centers in favor of a single one in Albany, N.Y.

Now the company is midway through the process of laying off another 1,500 IS and operations workers inherited from its acquisition of the failed Bank of New England; Fleet/Norstar's total IS staff now stands at about 4,500.

The consolidation strategy has already reduced IS expenses more than 25% by eliminating a lot of duplication in data centers and programming staffs and standardizing all applications software.

"For example, you still need only 25 to 30 people to maintain a deposit system, regardless of the number of banks supported, provided that you've standardized your [financial] products and software," Zucchini says.

—*Mitch Bettis*

into the generic category of "Level 3 programmers."

With a smaller staff, "you have to have multifunctional people. You just can't have specialists anymore," Edwards says.

—*Mitch Bettis*

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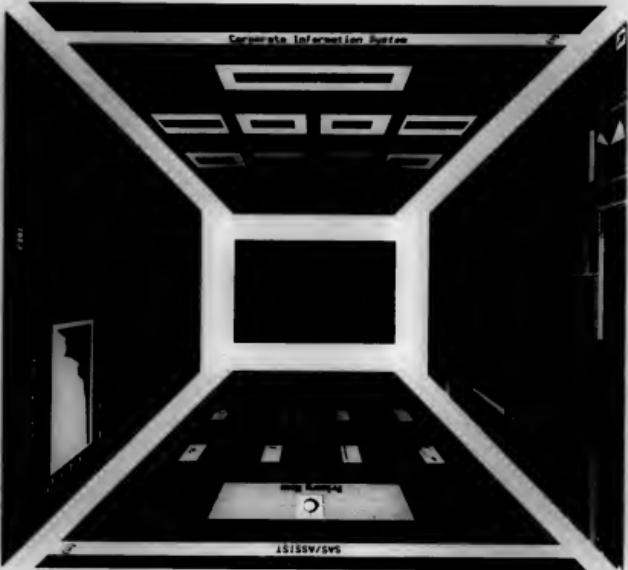
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MANAGER'S JOURNAL

EXECUTIVE TRACK



Sitel Corp., information systems director Ron Stauder has been promoted to vice president of IS and business development at the Omaha-based telemarketing service bureau. The Sitel network consists of 19 facilities operating in five states.

Stauder has been at the company since 1980.

Nashville-based Berol Corp., international purveyor of writing instruments and related products, has named John Lui as vice president of MIS. Lui joined Berol from Cincinnati-based Drackett Co., a subsidiary of Bristol-Myers Squibb Co., where he served as director of information services and senior information officer since 1979.

Mark S. Measagh, previously a senior consultant for information technology at Ernst & Young, has become the first director of information services at Fremont, Calif.-based Peripheral Land, Inc. (PLI), a manufacturer of storage products for personal computers.

Maugh, whose former posts included a four-year stint at IS at Ask Computer Systems, Inc. (now The Ask Cos.), will help spearhead PLI's planned expansion.

Louis Bimonte, former head of operations and systems for North American corporate finance and real estate at the Chase Manhattan Bank NA in New York, has been promoted to senior vice president of IS. An 18-year IBM veteran, Bimonte replaces Craig Goldfman, who became the bank's first chief information officer in January.

The Park Ridge, Ill.-based Data Processing Management Association (DPMA) has a new acting executive director: Susanne Lattimore. An IS professional for 21 years, Lattimore comes to DPMA from American General Life & Accident in Nashville, where she served as director of information support services.

Just what the doctor ordered

Accountant cures almost all in aiding ailing IS at medical products maker McGraw

BY JIM NASH
CW STAFF

When your corporate growth plan overtaxes your information systems operations, maybe it's time to call in an accountant. That's what medical products maker McGraw, Inc. did. And while Hirshberg might head up and reshape a failing IS department may be a bold departure, the medical products manufacturer figures it has made the correct change.

It's getting more than a handful: Rich Hirshberg, the former Metwest, Inc. controller hired last year to head up McGraw's IS shop, has reorganized the operation, reorganized its staff and drawn up McGraw's first cohesive IS game plan in years. And two months ago, he outsourced one aging but critical leg in the firm's systems triad to Ottawa-based SHL Systemhouse, Inc. (see related story, page 50).

Of course, McGraw is no stranger to change. The company has had more parents than a Hollywood star.

Shortly after World War II, McGraw Ohio was bought by American Hospital Supply Corp.; Baxter International, Inc. acquired American Hospital in 1985 but was quickly forced to cough up the McGraw division in order to avoid antitrust allegations.

Colgate-Palmolive Co. bought McGraw, later selling it to health care giant Kendall Co. Barely used to the latest office stationery, McGraw employees welcomed entrepreneur James Sweeney's investor group in October 1990 when it restored McGraw to independence and made Sweeney chief executive officer.

The new guard's first order was to shore up the firm's flagging finances. With that done — McGraw's revenue

rose 17% to \$273 million between 1990 and 1991, and Hirshberg predicts that that figure will double by 1996 — attention turned to IS.

During the acquisition merry-go-round, McGraw's IS operations had fallen by the wayside.

"IS was never really a priority [with previous owners]," says Hirshberg.

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to find an experienced IS executive with an appreciation of business and finance. Instead, the company chose an experienced business and finance executive with an appreciation of technology.

Hirshberg says he was brought in to "bring a business view" to IS. This translated into reacquainting IS with its constituency without inflating the budget by bringing in new equipment, he says.

"We saw we could become more competitive" if antiquated software and hardware slowed down operations, Hirshberg says. "Our strategic weapon is being a smaller and faster-moving competitor."

Far from being in fighting trim, however, the firm's IS spread ownership of mixed-vintage software based on three platforms. An aged suite of IBM applications, Hirshberg says, was a particular drain on McGraw's resources.

Perhaps most problematic was what Bush and Hirshberg agree was an outmoded view of technology's potential. Electronic data interchange and other technologies were in place to grease external communications. Internally, however, systems forgot it served users, according to Bush. For example, he says, sales and marketing personnel had difficulty getting information on specific accounts or the market in general.

IS effectiveness was additionally hampered, Hirshberg says, by its organization along departmental lines: manufacturing, sales and such. "One group would be busy, another twiddling its thumbs," he says.

Hirshberg reshuffled the deck to get one generic group of IS professionals before recommending that the IBM

Continued on page 80



JIM NASH

who inherited a hodgepodge of hardware and software, some of which dated back 20 years.

The systems department was "lobbying for new equipment, but their plead went on deaf ears. [The accountants] didn't understand what systems added to the business' bottom line," he says.

The communications gap yawned both ways, according to Dave Bush, McGraw's chief operating officer. "We were unhappy with the incumbent [IS director]," he says. "He'd been here too long. He didn't see that he was in a service-oriented department."

One option available to McGraw was

A new kid in town

"How does it feel? To be on your own. With no direction known?"

Bob Dylan

For some it would be a nightmare: taking a job with a dark horse competitor in a field with which you are unfamiliar and whose technology problems have compounded yours of inattention. That is exactly the situation that, account Rich Hirshberg walked into when he joined McGraw as vice president of IS 18 months ago.

What encouraged him to step off the edge of a secure career into the wilds of an unknown IS situation? "I think I warmed up to the challenge of trying to develop a strategy with the people who are already here," Hirshberg says.

While the department's mission was unclear, its organization unwieldy and the systems themselves almost user-unfriendly, "the people themselves were outstanding," Hirshberg said.

"I wanted people involved in bettering systems and

bettering the company through computers," he said. "One of my top peers is leaving an IS department that sits around in front of computers all day instead of going out to see how we manufacture goods, sell them, market them." As his first priority, Hirshberg brought the staff into the IS growth-planning process.

When he realized he would have to outsource all IBM mainframe applications, "I was a little fearful of the employees' reaction," he admits. In fact, no one Hirshberg did meet, "IS professionals find great comfort in having their job be the same every day," Hirshberg noted. "They are a very orderly group."

What made resistance the exception rather than the rule, he said, was the company's determination to make employees masters, rather than victims, of the process. Corporate management, which "listened to my plan, agreed that it was best and approved it the same day," made a priority of keeping the department involved, Hirshberg said.

JIM NASH

Re-engineering a cultural, more than technical, challenge

BY NELL MARGOLE
CW STAFF

CAMBRIDGE, Mass. — The consultant often credited with coining the word "re-engineering," has a warning for firms that plan to put his word into action:

"Re-engineering represents massive, holistic, multidimensional change" and is bound to be met with an equally sweeping resistance, said Michael Hammer, president of Hammer and Co. "Failure to anticipate and deal with this resistance will doom a re-engineering effort."

The critical role of the human factors in a re-engineering situation can't be stressed too often," Hammer told the several hundred attendees at his spring Re-engineering Conference last month. Structural and technological tools of redefining your company's culture will be, said, pale beside the challenge of selling change to change-averse constituencies

within the firm, many of whom are unaware of their subtle sabotage of an initiative they think they support.

"It's a weird stuff," Hammer said, "in a relatively easy; it's the soft stuff that's hard."



Information systems executives can be part of the problem or part of the solution, Hammer pointed out. For those who choose the latter, as well as for their analogs throughout the rest of the company, he spotlighted six key steps to wrecking

a re-engineering effort:

- Be surprised when you encounter resistance to change. Shaking folks for a natural and appropriate response, according to Hammer, is a good first step if you want to go nowhere.
- Assume that a powerful design will engender compliance. "When design and culture clash," Hammer noted, "design loses."
- Hesitate to ruffle feathers. "I don't know the secret of success," Hammer quoted comedian and undisputed business player Bill Cosby as saying. "But the secret of failure is trying to please everyone."
- Expect everyone to line up behind the plan. See Bill Cosby, above.
- Do not worry about resistance until it rears its head. Change management that does not start on Day 1 is already behind.
- Assume there's going to be a last day. "Change management must never stop," Hammer said.

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Control '92, Cincinnati, June 7-11 — Contact: Control, Cincinnati, Ohio. (513) 463-2300.

Securing Your Networks, San Antonio, June 8-10 — Contact: Philip Chapman, CSC Computer Resources, San Francisco, Calif. (415) 955-2200.

A/PC Systems, "92, Dallas, June 8-11 — Contact: Guy Baker, Sunnyvale, Calif. (408) 388-2373.

Power '92, Denver, June 8-11 — Contact: Pamela Gatto, J. D. Edwards & Co., Denver, Colo. (303) 498-9951.

Grooving and Manufacturing Customer-Focused Organizations, New York City, June 8-10 — Contact: The Conference Board, Inc., New York, N.Y. (212) 580-6500.

Automobile Expo '92, Dallas, June 9-11 — Contact: Automob, Inc., Sacramento, Calif. (415) 332-6364.

LaserWorld, Boston, June 9-11 — Contact: Jim Coffey, Brother & Partners, Inc., Woburn, Mass. (508) 875-0002.

Self Maintenance Users Conference, Minneapolis, June 9-11 — Contact: Dennis Edens Prosser, Minn. (612) 859-6232.

Networking for the '90s, Toronto, June 10-11 — Contact: Rogers Data Services, Markham, Ontario. (416) 453-6007.

Networking '92, Bedford, Mass., June 10-11 — Contact: Imaging Technology, Inc., Bedford, Mass. (617) 275-2700.

EDP Seminars, Washington, D.C., June 10-12 — Contact: Advanced Technology Institute, Dept. EDRK, Washington, D.C. (202) 225-8860.

Developing Successful Outsourcing Agreements, Chicago, June 11-12 — Contact: Due Tech Institute, Clifton, N.J. (201) 478-5400.

JUNE 14-20

The Partnership Conference, Chicago, June 14-17 — Contact: Diana Ditch, Life Office Management Association, Meeting Department, Atlanta, Ga. (404) 951-1777.

Computer Systems in Managing Information, Cambridge, Mass., June 15-19 — Contact: Center for Information Systems Research, Cambridge, Mass. (617) 223-2867.

Supersys '92, Chicago, June 15-18 — Contact: Ben Stauder, E. I. du Pont de Nemours & Co., Wilmington, Del. (302) 990-7800.

Supplier International Conference, San Jose, Calif., June 19-22 — Contact: Knowledge Industry Publications, Inc., White Plains, N.Y. (914) 238-2157.

Microtech '92, Ann Arbor, Mich., June 19-22 — Contact: Conference Management by Express, Inc., Green Park Park, Mich. (313) 446-1824.

The Second Annual Manufacturing Leadership Seminar, Cambridge, Mass., June 19-20 — Contact: Jessie Hey, Management Resources, Inc., Boston, Mass. (617) 233-2866.

Tutorial Week '92, Los Angeles, June 19-20 — Contact: Dave Oppenheim, Los Angeles Tutorial Week Chair, Los Angeles, Calif. (310) 267-5264.

Database World '92, Boston, June 20-23 — Contact: Tom Mandanis, West End Corp., Boston, Mass. (207) 227-2700.

APICS '92, Chicago, July 22-23 — Contact: APICS Member Supporter, Pala Church, W. Wis. (715) 237-6344.

Quick/Print Users Conference, New York, July 22-23 — Contact: QUIT, Salem, N.H. (603) 866-1232.

Facsimile and Multimedia Conference & Exposition, Boston, July 27-29 — Contact: Facsimile Publishing, Inc., Andover, Mass. (508) 470-3860.

ObjectWorld, Washington, D.C., July 28-29 — Contact: Wm. Morris, Technical Training Institute, Santa Monica, Calif. (310) 394-6365.

Informex Worldwide Users Confere-

nce, Boston, July 28-29 — Contact: Dennis Edens Prosser, CSC Computer Resources, Inc., Minneapolis, Minn. (612) 859-6232.

ObjectWorld '92, San Francisco, July 29-30 — Contact: Diane Oppenheim, West End Corp., San Francisco, Calif. (415) 225-4584.

Client/Server User Camp, San Francisco, Calif. (415) 553-3000.

JULY 19-25

Computer, San Francisco, July 20-23 — Contact: Mort Mandanis, West End Corp., Boston, Mass. (207) 227-2700.

ObjectWorld '92, San Francisco, July 23-24 — Contact: Diane Oppenheim, West End Corp., San Francisco, Calif. (415) 225-4584.

Quick/Print Users Conference, New York, July 23-24 — Contact: QUIT, Salem, N.H. (603) 866-1232.

Facsimile and Multimedia Conference & Exposition, Washington, D.C., Aug. 1-2 — Contact: Sybil Griffiths, National Trade Production, Inc., Alexandria, Va. (703) 687-6600.

JULY 26-AUG 1

The Managing Services Networks Seminar, Boston, Aug. 27-29 — Contact: Technology Transfer Institute, Santa Monica, Calif. (310) 394-6365.

ObjectWorld, Washington, D.C., July 28-29 — Contact: Wm. Morris, Technical Training Institute, Santa Monica, Calif. (310) 394-6365.

Informex Library Conference, New Orleans, Aug. 29-31 — Contact: Michele Pergman, Informex, Tarrytown, Calif. (408) 738-1843.

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nce, Boston, Aug. 20-23 — Contact: Dennis Edens Prosser, CSC Computer Resources, Inc., Minneapolis, Minn. (612) 859-6232.

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JULY 23-29

Informex Worldwide Users Confere-

Just what the doctor ordered

CONTINUED FROM PAGE 79

operations be outsourced.

Under the plan accepted by both company management and IS employees, Hirshberg is negotiating the final points of a three-year, \$4 million contract with Ottawa-based outsourcing and systems integrator SHL Systems. Fourteen McGraw employees who now work with the software development group will take jobs with SHL Systemhouse.

SHL Systemhouse will only handle IBM hardware needs, not software generation or maintenance. Stratus Computer, Inc.

based quality control systems, for instance, are specially designed for McGraw and should remain within the company, Hirshberg explains. The DEC installation is being cut back and eventually will be absorbed either by SHL Systemhouse or the Stratus equipment.

"I don't know that anyone in the upper levels looks at IS as a competitive tool," Hirshberg says, but the move in that direction is clear. "They look to me as the person whose job it is to make things work."

Outsourcing prescription

McGraw's recently sealed outsourcing deal with SHL Systemhouse is a model of the pragmatic, user-oriented IS planning that seasoned accountant Rich Hirshberg is attempting to make the mark of his IS stewardship. It also typifies the kind of outsourcing contract many analysts and outsourcing providers say will define the next wave in that market niche.

Loath to relinquish control of critical applications to outside specialists and reluctant to bind themselves to 10-year contracts in the face of certain, but certainly unpredictable, economic and technological change, users are turning to shorter, highly modular deals.

"Business analysts" are already hard at work spinning out descriptions of the new formats. Meanwhile, according to analysts, commercial firms are equally busy checking out Mc

McGraw's agreement, under which SHL Systemhouse will take over an older mainframe-based operation while partnering with McGraw to create applications to run on Stratus workstations, "very typical of the deals I've seen in the last eight months," said Howard Anderson, president of The Yankee Group, a market research and consulting firm in Boston.

Hirshberg "made a fine-of-scrimshaw decision: Systems [in part] was too antiquated to update. So we went out and found a good service company to do the work for him," Anderson said. "It's an appropriate way to behave."

But SHL Systemhouse, Hirshberg noted, won the McGraw bid over several competing outsourcing players on the strength of its stated desire and proven ability to more than a caretaker or outsourcer system.

"We need to get further ahead in a shorter time than our internal resources could take us," Hirshberg said. SHL Systemhouse, he said, will lend its open systems-oriented development and systems integration to McGraw's growth goals — thus propelling its own.

The mid-sized systems integration deal is becoming an ingrained trait in outsourcing agreements, Anderson said. "It's The Man Who Came to Dinner all over again. You can get the system up and leave, but here [SHL Systemhouse] is getting the system up and staying."

PC/Windows, Toronto, July 28-29 — Contact: The Windows Group, Northwood, Miss. (613) 744-8506.

Auto-Tech, Detroit, Aug. 25-27 — Contact: Automotive Industry Action Group, Southfield, Mich. (313) 595-3570.

AUG 30-SEPT 5

International Building Conference & Exposition, Anaheim, Calif. Aug. 31-Sept. 2 — Contact: Russell F. McKinnon, Trade Association, Inc., Rockville, Md. (301) 468-3210.

SEPT 20-26

ImageWorld, New York, Sept. 21-25 — Contact: Doubletree Business Group, New York, N.Y. (212) 333-6157.

Virtual Reality '92, Worcester, Conn. Sept. 22-25 — Contact: Mackie Conference Management, Worcester, Conn. (800) 236-0997.

BOOK REVIEWS

A personal look at Microsoft's Bill Gates

Hard Drive: Bill Gates and the Making of the Microsoft Empire
By James Wallace and Jim Erickson
John Wiley & Sons, Inc., \$22.95

Few people have cut as broad a swath through the personal computer industry as Microsoft Corp. Chairman Bill Gates. Admired and despised with equal passion, Gates has an uncanny blend of energy, intellect and killer marketing instinct that has made him the richest man in America — worth \$7 billion and counting — and that has kept his software behemoth on a gravity-defying climb.

The words of "Chairman Bill," 36, come close to gospel in the computer industry. No one moves without considering the reaction from a man resembling a Coke-guzzling computer nerd who peppers his nasal drone with the phrases "supercool" and "high bandwidth."

It's a dichotomy that longtime Microsoft observers and Seattle Post-Intelligencer reporters James Wallace and Jim Erickson have methodically relished in their engrossing new book, *Hard Drive*.

The pair has an indefatigable taste for sleuthing into Gates' past, speaking with hundreds of people from the rumpled chairman himself down to his ex-acquaintance. The result is a thorough if sometimes disquieting portrait of an obsessive, combative and frequently brilliant businessman who doesn't let anything, least of all friendship, stand in his way.

While *Hard Drive* occasionally gets caught in marveling at the man's jaw-dropping accomplishments, it balances that with an airing of some of Microsoft's dirty laundry. Among other things, the writers claim Microsoft uses its electronic-mail system to spy on employees and that it hired its first two female executives in order to land a lucrative Air Force contract and then treated them badly.

The book also details Gates' mistakes: the failure of OS/2, reported delays in releasing Windows and the envy Microsoft has fomented among competitors.

Gates may not be the cutest or funniest person in the computer industry, but in *Hard Drive* he's certainly one of the most fascinating.

JAMES DALY

Technical sampler

Books about computers often get a bad rap as being difficult to understand and overly technical. Here are some recent titles that won't frighten your end-users:

- *Voodoo DOS — Tips and Tricks with an Attitude* (by Kay Yerborough Nehus, Ventana Press, \$19.95) provides a plethora of information on using MS-DOS 5.0 to your best advantage. Icons point out "tips and traps," and topics covered include setting up DOS 5.0, using the DOS shell, creating batch files and managing memory. The casual writing style won't scare away new users, and the book contains enough technical merit that even DOS gurus will

find something new.

- *PC Hotline* (by Dan Gookin, Microsoft Press, \$14.95) is more advanced than *Voodoo DOS*, and it is intended as a reference for keeping PCs up and running as long as possible. Creating emergency disks, avoiding viruses and troubleshooting are all addressed in Gookin's witty style.
- *Unix for the Impatient* (by Paul W. Abrahams and Bruce A. Larson, Addison-Wesley Publishing Co., \$29.95), although less fun to read, is useful. It was designed to be a quick reference to the core of Unix commands and provides fast access to the common ones with complete explanations. Unix novices will find the well-organized index (complete with an alphabetical command

listing) invaluable for doing quick lookups.

- *Danny Goodman's Macintosh Handbook, Featuring System 7* (by Danny Goodman and Richard Seal Warren, Bantam Books, \$29.95) attacks the subject of the highly graphical Macintosh in a highly graphical way. The entire book mimics a Macintosh interface (chapters are marked with a menu bar at the top of the page) and is filled with pictures, screen shots and diagrams. Both hardware and software are covered. Your eyes may have to do a lot of hopping around the pages to find what you're looking for, but the interesting design certainly keeps your attention.

CHRISTOPHER LINQUIST

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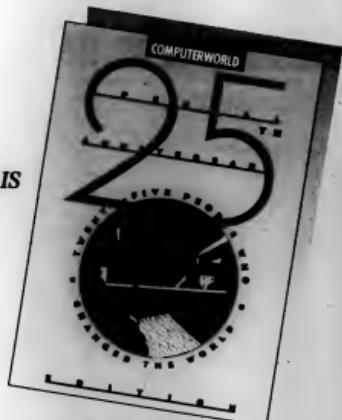
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"Our clients - banks, insurance firms, pharmaceutical and chemical companies, and software developers - typically require seasoned professionals with unique, hard-to-find skill sets. However, professionals with a minimum of three years' experience in specific technical areas are often few and far between. To fully satisfy our clients' objectives, I need to target an audience with very technical expertise. With my highly qualified readership, Computerworld is crucial in helping us make that match.

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higher quality responses. In the past two weeks, for example, nearly 20% of the resumes we received came from Computerworld alone.

"In our business, recruitment results like these are key. In 1990 we placed about 135 new starts in addition to the employees we already had in place. This year we expect that number to total 165 or possibly higher. To ensure that Devon Consulting continues placing the right professionals in the right jobs, we fully intend to run an ongoing recruitment advertising schedule in Computerworld. When it comes to advertising, we believe that consistency is just as important as the size, message, and vehicle.

"Overall, our Computerworld recruitment advertising fulfills a threefold purpose. First and foremost, it's invaluable in recruiting all the top technical talent we need. It also helps us gain share of mind among a highly qualified base of readers. Finally, we know our clients read Computerworld and view its advertisers as significant players in the industry. When they read our advertisement, then, they see Devon Consulting as an advertiser in the industry's trade journal. That kind of presence only enhances our company image."

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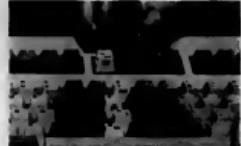
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MARKETPLACE

Negotiating with PC resellers

CHRIS PERRY
SPECIAL TO CW

It's nothing to get paranoid about, but you've got to watch out for personal computer resellers. It takes some fancy footwork to maneuver through all the offerings and avoid potential problems.

Despite the difficulty, getting a good deal from resellers is possible and can . . .

not or does not want to handle installation and ongoing support. If you opt for a la carte, you purchase services such as system configuration, shipping, delivery, support and others on an as-needed basis.

The advantage of this method is you don't pay for anything you can't use. The drawbacks are that it requires buyers to clearly understand end user needs.

There are also more checks and balances for buyers to tell if they're paying for services that have not been provided.

The most common of these approaches is negotiating a service plan into the package. For most companies, these means systems are delivered, configured and set up for operation. This bundled approach is best for low cost and 20% to 35% less than the manufacturer's list price.

For starters, there are three main ways to buy computer equipment from a reseller: box-to-dock, "la carte" and bundled services.

In strict price terms, the cheapest deal is box-to-dock. This is a handle-on-a-hand whereby the reseller simply delivers the equipment. The cost for box-to-dock is roughly 6% to 12% more than a reseller's cost and 20% to 35% less than the manufacturer's list price.

It is also a low price compared with other purchase methods. For that reason, most resellers don't recommend it. And on their side, it's also not always the best solution for a company that can-

not afford to be more expensive, depending on the level of service, you will be charged a 2% to 7% premium on top of the box-and-dock delivery price.

But bundled services often ends up being the most cost-effective approach, largely because resellers are more likely to deal this way and to make it worthwhile for the buyer.

To see if you're getting a good

deal, you should always request prices for both box-to-dock and a bundled service plan to determine the added premium. This may sound simple, but requesting a breakdown of prices is a rare practice for most companies.

Volume benefits

Buyers can often pick up extra services for next to nothing if they've established a relationship with their reseller and they buy in volume.

For example, you can ask the reseller to throw in warranty tracking services — where the reseller keeps track of warranties for equipment at almost no cost. In addition, help desk operations may also be included if the company's buying volume is large enough.

For purchases of \$5,000 to \$10,000 a month, a reseller may set up a toll-free telephone number for end users to call with questions. On higher volumes, resellers may provide outsourcing, where their own employees work at a company's site full time. When negotiating an outsourcing deal with a reseller, a rule of thumb is to expect to need one person per \$500,000 worth of business.

Other negotiables include training, technical support, loaner equipment and even freight expenses.

When choosing a reseller, it's wise to submit a request for proposal to more than one. Also, ask

for references from companies getting similar services. If a reseller balks, you should look elsewhere.

Even after you and the reseller have settled on a price and a plan, you're still entitled to reap the rewards of any price reductions that the manufacturer offers. But there's a catch: Not every reseller will alert purchasers that such a reduction has occurred. Some resellers will give you an updated pricing schedule automatically, but if yours doesn't, ask for one at least every quarter.

Unfortunately, there will always be resellers who do not play by the rules. One common trick they pull is the "switcharoo":

The reseller substitutes a more expensive brand-name memory board or hard drive with a peripheral made by a little-known manufacturer. The reseller can save a

lot of money this way because no-name peripherals cost up to 50% less than their brand-name equivalents.

Substitutions can also interfere with the manufacturer's warranty. For instance, if you send your malfunctioning Personal System/2 to IBM for repair and the vendor finds a third-party memory board inside, the warranty most likely will not cover the repair.

Most resellers practice good business. However, to make sure you get what you want, the best situation is to develop a long-term relationship with a reseller you trust.

Perry is the regional vice president of Indianapolis-based Graham Management Computer Centers and the chairman of the Association of Better Computer Dealers.

Too good to be true

Beyond the surface of huge rebates, price-slashing incentives and other special deals offered by resellers, something else is brewing under the surface. This offers usually originates with the manufacturer, which may be having a clearance sale on too-discounted models or clearing the shelves to make room for a new model. In any case, you should ask your reseller about the reason behind a manufacturer's rebate.

And here's a word of caution for overzealous bargain hunters: If you constantly haggle resellers down to the bare bones on prices, they may, in turn, be likely to provide you with substandard service.

You may also beat yourself out of services that would have been cheaper if bundled into the original price.

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Industry Almanac

RECOMMENDATION CHANGES

UPGRADED FROM HOLD TO BUY: Sun Microsystems, Inc. (Mabon Securities Corp.). The company's fiscal 1992 earnings estimate remains at \$1.96 per share, but next year's earnings are raised from \$2.25 to \$2.40 per share. Sun's (SUNW) next generation of Scalable Processor Architecture (SPARC) products should accelerate revenue growth. With a \$15,000 base price, the new systems are expected to offer twice the performance of current SPARC 2 workstations. The new boxes, based on the superscalar Viking chip from Texas Instruments, Inc., could rival existing products from Hewlett-Packard Co. and IBM.

UPGRADED FROM HOLD TO BUY: Apple Computer, Inc. (Bear, Stearns & Co.). During the balance of the current fiscal year, Apple (AAPL) will be entering the education market with the 68030-based Macintosh II. This expansion along with continued brisk sales of PowerBook notebook computers and a surge in printer sales to non-Apple users, makes Apple stock a good buy right now. There could be a resurgence in earnings momentum in fiscal 1993 from a new product cycle of low-priced, compact, diskless/read-only memory-equipped Macintoshes, file servers and consumer electronics products. New distribution channels are also on the horizon.

INITIAL PUBLIC OFFERINGS

SuperMac Technology, Inc. plans to offer 2.5 million common shares on the NASDAQ exchange, priced between \$10 and \$12 per share, under the symbol **SMAC**. The 4-year-old Sunnyvale, Calif.-based company makes desktop color graphics boards and large screen displays for Apple Macintoshes. Products range from \$400 to \$3,650 and are sold via 1,300 resellers, distributors and mail-order companies.

Four-year-old Electronic Information Systems, Inc. plans to offer 1.7 million common shares, labeled EISI, for between \$7 and \$9 on the NASDAQ exchange. Based in Stamford, Conn., the firm makes call-processing and automated reporting systems for businesses that rely heavily on telephone campaigns. Product prices range between \$75,000 and \$750,000.

USA DAVIDSON and KIM S. NASH

Computerworld Friday Stock Ticker

33

KEY 03 – New annual high-resolution air parcels
• Contains data collected at Gage, Arkansas, during 2003.

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Small-scale pasture management at Frostburg, Maryland, and additional grazing options. *Crop Management*, Vol. 13(7), 1991, p. 917-919. (Cited in this publication as CM 1991-9171.) Copyright 1992 by CW Publishing Co., Inc. All rights reserved. Conservation tillage research was first made available to farmers through the University of Maryland, 300 W. Lombard St., Baltimore, Md. 21230. It may be purchased through Morgan McLearen Books, Inc., 1000 18th St., N.W., Washington, D.C. 20036. Conservation tillage information is also available from the Conservation Center, ECO, provided that the user pay \$3.00 per copy of the article, plus \$5.00 shipping and handling. Send payment to Conservation Center, 27 Camp Street, Somerville, MA 01870. (800) 744-3250. Conservation tillage information is also available from the University of Maryland, 300 W. Lombard St., Baltimore, MD 21230. A one-year subscription to *Crop Management* costs \$20.00 U.S.; \$24.00 Canada; \$31.00 elsewhere. A one-year subscription to *Soil Management* costs \$20.00 U.S.; \$24.00 Canada; \$31.00 elsewhere. A one-year subscription to *Agroforestry Systems* costs \$20.00 U.S.; \$24.00 Canada; \$31.00 elsewhere. A one-year subscription to *Agroforestry Systems* is required for *Soil Management*. Subscriptions can be sent to our local subscription service to begin. Backissues call toll free (800) 969-1001.

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APPENDIX



COMPUTER INDUSTRY

IN BRIEF

Novell Q2 profits soar

Novell continued strong demand for networking and operating systems products. Novell, Inc., last week posted a second-quarter net income of \$61.3 million, an increase of 60% from the corresponding period in 1991. Revenue was up 50% in the quarter to \$150 million. Growth was spurred by international sales, up 85% from the same period last year, and by Novell's acquisition of Digital Research, Inc., the firm said.

Alliant Computer Systems Corp. has filed for Chapter 11 bankruptcy protection after a string of losses that left the company with little cash to continue operating. The Littleton, Mass.-based company has halted product development and sales and has cut 75% of its worldwide staff, from 225 to 60 workers. Alliant said it will continue servicing its installed base of 600 while it works with creditors to restructure its operations.

Short leases at The California Superior Court recently confirmed an arbitrator's award to Advanced Micro Devices, Inc. (AMD) in its copyright infringement suit with Intel Corp. Last February, the arbitrator awarded AMD \$15 million and the right to sell its AM386 line of microprocessors. . . . Wang Laboratories, Inc. said it will cut 1,000 employees during the next several months as part of its ongoing effort to slice expenses. . . . Fujitsu Ltd. reported a 36% decline in net profit to \$1.02 billion in its fiscal year ended March 31, on revenues of \$25.88 billion. . . . Hitachi Ltd. posted a profit of \$699 million in the fiscal year ended March 31, a decline of 45% from the same period last year.

Sales for the year were flat at \$58.3 billion.

Battered CDC to spin off computer group

BY ELLIS BOOKER
CW STAFF

MINNEAPOLIS — Capping years of struggles, restructuring and divestments, Control Data Corp. (CDC) said last week it would spin off its computer products unit as a separate firm.

The new 3,500-person firm, dubbed Control Data Systems, Inc., will be 100% owned by Silicon Graphics, Inc. in Mountain View, Calif. Tokyo-based NEC Corp. is considering buying 5% of the company, CDC said.

Silicon Graphics has supplied CDC with workstations and servers since 1986. CDC sells NEC's SX-3 supercomputers in North America and Europe.

CDC's remaining businesses will be renamed Cardian Corp., effective today.

Industry analysts and CDC customers reacted positively to the announcement, noting that CDC's computer business had effectively been separate from its services units for some time. "One of the reasons the company split up is there was very little synergy between the two sides of the business," said Phil Rupel, a research analyst at Sanford C. Bernstein Co. in New York.

"We think anything they do to make themselves stronger is in users' best interest," said Carolyn Gard, manager of specialized systems support at the University of Georgia in Athens, Ga., and current president of VIM, a CDC user group.

Given that the computer products group already had its

own marketing and sales force, "I don't think this spells much for existing customers," said Bob Kirkman, a past president of VIM and president of Open Systems Services, Inc., a systems integration services company in Windsor, Conn.

Equity or bust. James E. Ousley, who was named president and chief executive officer of Control Data Systems last week, confirmed that the ability to attract equity investment from the firm's strategic technology partners was a key part of the decision to split the company. "In 1989, when we said we would focus on the



Ousley will now serve as president and CEO for spin-off Control Data Systems

transition from proprietary to open systems, we knew we would need partnerships, alliances and financing," he said.

But these partners resisted equity positions in a technology company that was also in a variety of services business, he said.

"Making small equity investments in partners" to cement

The defunct Bunch

A chapter of computer industry history closed last week with CDC's plan to spin off its computer group.

CDC was the last survivor — at least in name — of what was known as the Bunch companies, a group of five mainframe vendors tolling in the shadow of IBM for nearly 30 years.

But by the mid-1980s, most of the Bunch had faltered, unable to compete in an industry racing toward lower priced, microprocessor-based architectures.

The Bunch was composed of the following firms:

- Burroughs Corp. (merged with Sperry to form Unisys Corp. in 1986).
- Univac (later known as Sperry Corp.).
- NCR Corp. (acquired by AT&T in late 1991).
- CDC.
- Honeywell, Inc. (sold its computer business piecemeal to Group One during the late 1980s).

ELLIS BOOKER

Mail-order vendors dodge sales tax shot

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — Despite pleas from revenue-hungry states, the U.S. Supreme Court last week decided not to force mail-order vendors to collect sales taxes throughout the country.

The addition of the sales tax would have raised the consumer cost of mail-order personal computers and nearly eliminated the price advantage of the mail-order channel, said analyst Chuck Barrey at International Data Corp. in Framingham, Mass.

The Supreme Court, in an 8-to-1 decision, preserved the status quo by reaffirming its 1967

decision that allowed states to impose taxes on out-of-state vendors only if the vendor has a physical presence, such as an office, store or factory, within the state.

Many states, led by North Dakota, wanted the 1967 ruling overturned so that they could start collecting an estimated \$3.2 billion in lost revenue. A North Dakota victory in the case would have forced mail-order computer vendors to collect sales taxes from customers in hundreds of political jurisdictions.

The lone dissent came from Justice Byron R. White, who agreed with North Dakota that the 1967 physical presence test

is outdated at a time when much of interstate commerce is conducted by mail, fax and modem.

The direct-marketing industry applauded last week's majority ruling, but the industry's battle with the states is not over. "The big concern right now is what, if anything, is going to happen in Congress," said Richard J. Leighton, a Washington, D.C., attorney for a coalition of small catalog firms, including several in the computer industry.

The Supreme Court took the unusual step of inviting Congress to tackle the issue by amending the Constitution and using its constitutional power to regulate interstate commerce. Although legislation on sales taxes is not expected to

pass during this election year, lobbyists on both sides agreed that the states and their business allies will wage a long-term, grass-roots campaign to overturn the Supreme Court ruling.

The impact on large mail-order firms such as Dell Computer Corp. and CompuAdd Corp., both in Austin, Texas, would be minimal because they already charge sales tax in most states.

However, the condition of small catalog firms, which includes companies such as MicroProse Software, Inc. in Hunt Valley, Md., and Black Box Corp. in Pittsburgh, argued that collecting taxes nationwide without a uniform standard could be an administrative nightmare for small businesses because each jurisdiction has different rates, rules and exemptions.

current relationships is in line with strategic trends elsewhere in the industry," Ruppel said.

For instance, Silicon Graphics' 10% investment, Ruppel said, sets a trend that CDC had begun to evaluate other sources for the reduced investment set computing-based workstation it bought from Silicon Graphics,

Ousley said the computer group's already long list of technology partners would grow in the third quarter, where he expects to announce agreements with computer-aided design and computer-aided software engineering firms.

Even under its new guise, however, Control Data Systems will face an old and serious task: migrating its proprietary hardware systems to lower margin, Unix-based architectures.

In 1992, he said, revenue from open-systems platforms would exceed revenue from CDC's proprietary systems. He said the \$130 million restructuring charges taken by the new company would help finance the migration from proprietary to open systems during the next two to three years.

About a third of CDC's computer products group's \$570 million in revenue last year came from maintenance and service for its proprietary Cyber mainframe line. The remainder came from open systems and Cyber sales. About \$1.2 billion in revenue was derived from CDC's services business last year.

CDC said it would take a second-quarter charge of about \$400 million to cover the separation, other restructuring and losses. CDC also said it would capture Control Data Systems with \$50 million in cash at the time of the spin-off and another \$45 million in December.

TRENDS

PRICE SLASHING

Heavy discounting is driving down residual values in a very competitive mainframe market

Retail residual value projections

Model	Announced	List price	1/93	1/94	1/95
IBM ES/9021-900	9/90	\$22,818,795	\$11,409,397	\$7,758,390	\$4,563,759
IBM ES/9021-820	9/90	\$16,495,795	\$8,346,298	\$5,278,814	\$2,964,882
Amendil 3995-6450M**	9/90	\$24,071,544	New*	\$6,499,317	\$3,610,723
Amendil 3995-6550M**	9/90	\$17,500,625	\$6,665,338	\$4,300,150	\$2,575,081

Projected used retail value

(As percentage of list price)

Model	1/93	1/94	1/95
IBM ES/9021-900	50	34	20
IBM ES/9021-820	50	32	18
Amendil 3995-6450M**	New*	27	15
Amendil 3995-6550M**	38	24	13

* The equipment is being marketed by the manufacturer and/or other distributor at or near the manufacturer's list price or at a discount to that list price.

** These Amendil models do not include the Enhanced Performance Feature.

Source: Technology Investment Strategies Corp., Framingham, Mass.

CW Chart: Michael Sippey

NEXT WEEK

Paul A. Strassmann, director of defense information at the Pentagon, is working to improve nearly every step the Defense Department takes to procure and use information technology. Strassmann aims to trim annual software costs by more than \$25 billion in 15 years while giving the U.S. a "fight on arrival" capability enabled by computers.



Who's the boss? Not the IS director: "Coach" is a closer description of the evolving role of a firm's IS head, say many of those now in that role. A slew of new tools and the driving of information systems throughout the business they serve are converging to turn the CIO into a coach for an expanding team of users. See Manager's Journal.

INSIDE LINES

The name game

► Lotus' much discussed Notes-based software distribution and tracking product will not be announced at PC Expo as previously planned, according to a company spokesman. Logistical delays — such as lining up resellers — will push availability back at least a couple of months. And when the product does arrive, it won't be called Lynx. The name, in all its iterations, has been well-copied by the software industry. So Lotus is holding an internal contest to find a new name, with names for two at a favorite restaurant as the prize.

Opening divergent Windows

► An API linking Microsoft Windows environments to TCP/IP communications protocols will be announced within the next two weeks by Microsoft, Novell, Sun and other vendors, a Novell spokesman said. Dubbed WinSock, the specification is a standards alternative to Novell's LAN Workplace for DOS — NetWare server software that provides DOS and Windows 3.0 users with direct access to a broad range of dissimilar computing resources using TCP/IP.

Here today, gone tomorrow?

► IBM's still trying to buy some or all of Parallel could be disclosed as early as tomorrow, sources close to both companies say. The venture capitalists who funded Parallel will no doubt breathe sighs of relief. "It was completely dead at the whim of the VCs," one source said. While the deal initially was for IBM to buy only a piece of Parallel, the supercomputer maker may in fact cease to exist as an independent company. One source at IBM said, "They don't have a product line anymore — it's their product line now."

Chip shay

► IBM's Bill Flips told analysts and consultants last week that the Power PC platform is ahead of schedule, with low-end products due by year's end. He added that by 1995, IBM expects 90% of the servers it sells to be based on the Power PC chip. Representatives from Motorola said they expect to use 0.5-micron technology and 48-bit, "bleeding-edge" chip-building technology — to make the chips in a Texas plant.

Blended appliances

► IBM and Apple are working on putting support for AppleTalk networks on OS/2, according to an IBM insider involved with the pair's joint development partnership announced last summer. Doing so will "make the PS/2 a file and print server for the Mac," the source explained, and will preserve user access to the power and ease of use of Macintoshes running as clients. Right now, only host/terminal relationships are possible between the two.

Seeking good penmanship

► NCR will add a second pen-based product to its lineup in mid-June. The System 3130 Notepad will resemble the existing Model 3125 and cost about the same, but it will improve two major flaws of its predecessor: a poor display and a tendency to break. The 3130 will add a liquid display and be more rugged, sources close to the company said. It will be a lower volt version of Intel's 80386SL. NCR refused to comment.

Seeking interoperability

► Apple is discussing with its larger corporate customers how to implement cross-platform application development tools that will work with Macintosh and Windows-based PCs. The tools announcement, due this summer, will include co-developing agreements between Apple and third parties.

Novell is backsliding away from what it calls an erroneous slide shows to routers and analysts last week in Provo, Utah. The slide implied that Novell will handle peer-to-peer networking functions into its core operating system sometime next year. A spokesman said Novell is moving in that direction but has not set a timetable for such development. Get any news tips? Phone, fax or CompuServe News Editor Alan Alper at (800) 343-6474; (609) 875-0021 or 705-2413, respectively. Or try Computerworld's 24-hour voice-mail tip line at (800) 820-8555.

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